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Title.

CATALOGUE

OF

AGRICULTURAL AND HORTICULTURAL

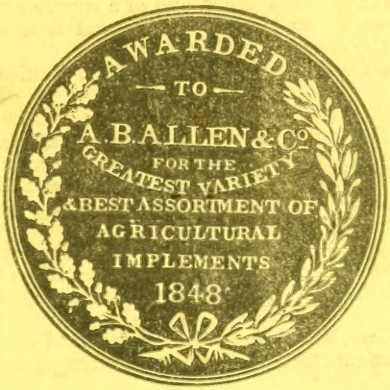
IMPLEMENTS,

AND OF

FIELD AND GARDEN SEEDS,

FRUIT AND ORNAMENTAL TREES,

DOMESTIC ANIMALS, &c.



American Institute
GOLD MEDAL.

THIRTEENTH EDITION.

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New-York:
A. B. ALLEN & Co.
1851.

NEW-YORK

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MANUFACTURERS AND MERCHANTS,

189 and 191 Water Street, N. Y.

WE respectfully invite the attention of the public, to the largest and most complete assortment of Agricultural and Horticultural Implements, and Field and Garden Seeds, to be found in the United States. To give some idea of our establishment, and to save replies to numerous questions, we have issued a Catalogue of upwards of 100 pages, with numerous engravings, descriptive of the above, which will be distributed *gratis*, on application for it, *post paid.*

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THE

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A MONTHLY PERIODICAL,

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A. B. & R. L. ALLEN, EDITORS.

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TERMS.

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ALMACEN DE AGRICULTURA,

ESTABLECIDO EN LA CIUDAD DE NEW YORK

Por los Señores A. B. ALLEN y COMPAÑIA,

CALLE DE WATER, NO. 191.

LOS que suscriben habiendo desde mucho tiempo conocido la necesidad que habia en esta ciudad de un establecimiento, donde pudiera encontrarse un surtido de instrumentos de agricultura, semillas, plantas, árboles y abonos, mas escojido y variado de lo que existia en New York, abrieron el año de 1845 un almácen en la calle de Water, para la venta de todo lo perteneciente al ramo de agricultura. Ellos tienen el surtido mas abundante y completo que hay en los Estados Unidos, y convidan á todos para que vengan y examinen personalmente. Para dar alguna idea de su establecimiento y evitar la necesidad de responder á muchas preguntas publican este catálogo, que se distribuirá *gratis* á las personas que deseen tenerlo. Todo comunicado remitido con el objeto de pedir el catálogo debe ser *franco de porte.*

El surtido de instrumentos abraza mas de ciento clases diferentes de arados, una gran variedad de gradas, cultivadores (cultivators), rodillos, sembradores, potencias motrices para caballos; máquinas de trillar, para moler y para cortar los tallos del maiz (maloja) paja y heno; desgranadores, palas, legones, azadas, guadañas, rastros, cuchillos, &c., &c., de todo lo cual se encontrará una descripcion mas circumstanciada en el catálogo que se acompaña. Casi todos estos instrumentos estan hechos por modelos nuevos y muy mejorados y se garantiza que los materiales son de los mejores y la obra muy fuerte y superior.

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A. B. ALLEN y Ca., New York, calle de Water, No. 191.

Enero, 1851.

The American Agriculturist.

(EL AGRICULTOR AMERICANO.)

Esta obra consiste de treinta y dos pàjinas de *octavo*, y tiene muchas y hermosas làminas. Su objeto es instruir al labrador, hacendado, criador de animales y al jardinero. Su editor es el Señor A. B. ALLEN, y la publican el Señor CHARLES M. SAXTON, de New York. El precio de la suscripcion es un *peso fuerte* por año. El decimo volúmen principió el 1ª de Enero de 1851. Se venden los volumenes anteriores encuadernados con elegancia y uniformidad por el precio de $1.25c.

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A. B. ALLEN et Cie.
No. 191 Water street, New York.

New-York
Agricultur-Waaren-Lager
von
A. B. Allen u. Co., 191 Water St., N. Y.

Der Mangel eines Etablissements, in welchem eine größere Auswahl verschiedenartiger Ackerbaugeräthschaften und mannigfaltiger Getreidearten, Sämereien, Pflanzen, von Bäumen und Düngungsmaterial, als bisher in irgend einem Locale bezogen werden kann, ist sehr allgemein empfunden; um diesem Bedürfnisse abzuhelfen, errichteten Endesunterschriebene im Jahre 1845 ein Waarenlager jeder Art zum Ackerbau gehöriger Gegenstände No. Water Street. In den Vereinigten Staaten haben wir die ausgedehnteste und vollständigste Auswahl der bezeichneten Artikel beständig an Hand und laden das Publicum ergebenst ein, dasselbe zu besuchen und über die Güte desselben selbst zu urtheilen. Wir haben dieses Verzeichniß drucken lassen, um annäherungsweise eine Idee von unserem Etablissement zu geben und um nicht ferner genöthigt zu sein, auf Anfragen zu antworten; dasselbe wird auf Verlangen einem Jeden unentgeldlich zugestellt werden. Desfallsige Mittheilungen sind jedoch portofrei einzusenden.

Die Geräthschaften an Hand begreifen mehr als **hundert** verschiedene Arten von Pflügen, eine große Mannigfaltigkeit von Eggen, „Cultivators", Rollen, Säemaschinen, Maschinen von ein- und mehrfacher Pferdekraft (Horse-Powers), Dreschmaschinen, Mühlen, Feldstangen, Stroh- und Heuschneiden, Maschinen zum Enthülsen des Getreides, Schaufeln, Spaten, Hacken, Sicheln, Sensen, Messer, ꝛc. ꝛc. Die nähere Beschreibung derselben ist in dem beikommenden Cataloge nachzusehen. Obengenannte Geräthschaften sind meistens nach neuen und sehr verbesserten Mustern angefertigt. Man steht dafür ein, daß sie aus dem besten Material gearbeitet, auf die dauerhafteste Weise zusammengesetzt und von vorzüglichem Ansehn sind.

Gußwaaren, Skelet-Pflüge (Skeleton-Plows), Eggenzapfen und alle Arten Eisenwaaren werden auf Bestellung aufs Beste und Billigste angefertigt.

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Getreide auf Confignation — Alle Arten von Getreide werden zum Verkauf auf Confignation entgegengenommen.

A. B. Allen & Co., 191 Water Street, New-York

Januar, 1851.

"The American Agriculturist"—Ein monatliches Blatt von zwei und dreißig Seiten Octavo, mit zahlreichen, geschmackvollen Verzierungen, zur Belehrung der Landwirthe, Plantagenbesitzer, Viehzüchter und der Kunstgärtner. Herausgegeben von A. B. Allen. Gedruckt von Charles M. Saxton, New-York. Preis: Ein Dollar jährlich. Der *zehnte Band* begonnen am 1. Januar. Rückständige Bände, geschmackvoll und gleichmäßig gebunden zum Verkauf. Preis $1.25.

☞ Einem Jeden, welcher für baare Bezahlung Bestellungen auf Güter für das Waarenlager oder Subscriptionen für den American Agriculturist bewerkstelligt, werden angemessene Commissionen gegeben.

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Large Horse,	" 1 B,	6 00	7 00	8 00	
Two Horse,	" 2 B,	7 50	8 75	10 00	
Large Horse,	Imp. Eagle, No. 0,	6 00	7 00	8 00	
Two do.	do. do. 1,	8 00	9 25	10 50	$11 00
" "	do. do. 1&36, Coul.	9 00	10 25	11 50	12 00
" "	do. do. 2,	8 50	9 75	11 00	11 50
" "	do. do. 2, Coul.	10 00	11 25	12 50	13 00
Four Horse,	do. do. 20&25,	10 00	11 50	13 00	14 00
Three Horse,	do. Sward C,	9 00	10 50	12 00	13 00
" "	do. do. B,	10 00	11 50	13 00	14 00
" "	do. do. D, Coul.	12 00	13 50	15 00	16 00
Large Horse,	Eagle S. Sharp., No. 1	5 00			
Two do.	do. do. do. 2	6 50	7 50	8 50	
do. do.	do. do. do. 3	8 50	9 75	11 00	11 50
Three Horse,	do. do. do. 4	9 50	10 75	12 00	12 50
Four Horse,	do. do. do. 5	10 50	12 00	13 50	14 50
Three Horse,	Left Hand do. No. 40	10 00	11 50	13 00	14 00
Four Horse,	do. do. do. 41	12 50	14 00	15 50	16 50
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Two Horse,	" A 1, "	9 00	10 25	11 50	12 00
do. do.	" A 2, "	10 00	11 50	13 00	14 00
Three Horse,	" A 3, "	12 00	13 50	15 00	16 00
Four Horse,	" A 4, "	14 00	D. Rod 15 00		
Light Two Horse,	0 0	7 00	D. Rod,	W. & D. Rod	
Large Horse,	" 0 Sub-Soil,	5 50	6 50	8 00	
Two Horse,	" 1 "	7 00	8 50	10 00	
Six Horse,	" 2 "		D. Rod 12 00	13 50	
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Refugee, or Thousand to One,
POLE BEANS, Dutch Case Knife,
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Large Lima,
Saba, or Carolina Lima,
Scarlet Runner,
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Dwarf Marrowfat,
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OF

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AND

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WITH A DESCRIPTION OF THE

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AND THE PROPER TIME AND MANNER OF TRANSPORTING THEM SOUTH AND WEST.

THIRTEENTH EDITION.

NEW YORK.

A. B. ALLEN & CO.,

NEW YORK AGRICULTURAL WAREHOUSE, 191 WATER STREET.

1851.

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DESCRIPTIVE CATALOGUE.

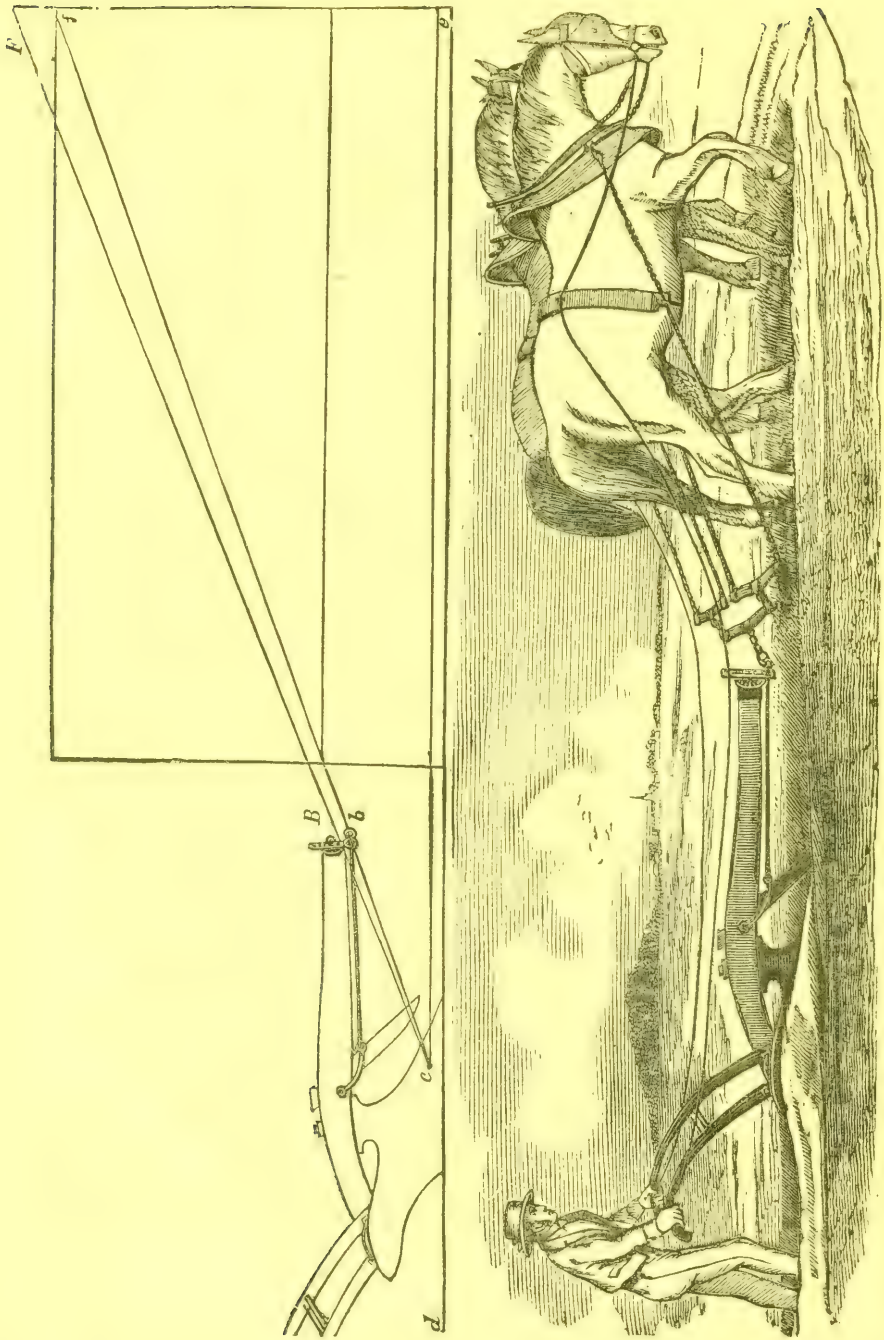
PLOWS.

THE plow is the most important implement on the farm. It is now generally made of cast-iron, and this is not only much the cheapest, but for ordinary use, it is also the best. The point, being of cast-iron, is easily replaced at a moment's notice, and with trifling expense, when either broken or worn out; and, in consequence of being made from a mixture of several kinds of the best metal, it has the tenacity, strength, and durability of the best steel. There are upwards of sixty different kinds of plows kept in this Agricultural Warehouse, among which are the Root-Breaker, Prairie, Sward, Meadow, Stubble, Self-Sharpener, Centre-Draught, Corn, Cotton, Rice, Sugar-Cane, Double-Mould-board, Trenching, Paring, Ditching, Side-Hill, Horizontal, and Subsoil-Plows. They are of various sizes, from one horse to six, and are calculated for all kinds of soils. Some of these plows have the common, and some the Scotch clevis; some have the draught-rod, while others have a crane-clevis attached, so that the team can walk on the sward instead of a wet furrow, or the plows can run close by the side of a fence or ditch. The prices vary from $2 to $20, according to the size and finish.

REMARKS ON PLOWING.

From the complicated structure of the plow, and the manner in which circumstances oblige us to apply the draught to the implement, some misconceptions have arisen as to the true operation of the draught, and the proper manner of its application. Too little is understood of the true principle of draught, to enable the plowman to attach his team and arrange the clevis so that the plow will do its work properly, and with the least force or power. To render this subject intelligible to every mind, the following remarks are made in connexion with the plate annexed, Figure 1.—[See next page.]

Let *b* represent the forward end of the beam, and *c*, the centre of resistance on the plow, which may be assumed at 2 inches above the plane of the base of the plow, *d e*, though it is liable to constant changes from the depth of the furrows, and constant inequalities in the soil.


F
f
e
B
b
c
d

We have first to consider the particular form of those parts through which the motive power is brought to bear upon the plow It is evident that the motive force acts in a direct line from the hook or ring at the shoulder of the animal, to the centre of resistance, and were it not for considerations of convenience, a straight bar or beam lying in the direction *c b*, and attached firmly to the body at *c*, would answer all the purposes of draught perhaps better than the present beam. But the draught not being the end in view, but merely the means by which the end is accomplished, the former is made to subserve the latter; and as the beam, if placed in the direct line *c* to *b*, would obstruct the proper working of the plow, we are constrained to resort to an indirect action to arrive at the desired effect. This indirect action is accomplished through the medium of an angular frame-work, consisting of the beam and the body of the plow, so strongly connected together as to form an unyielding structure. The effect of the motive force applied to the frame-work at the point *b*, and in the line of *b* to *f*, produces the same results as if *c b* were firmly connected by a bar in the position of the line *c* to *b*, or as if that bar alone were employed.

The average length of the trace chains being 10 feet, including all that intervenes between the clevis of the plow at *b*, and the horse's shoulders, let that distance be set off in the direction *b* to *f;* and the average height at the horse's shoulders where the chains are attached, being about 4 feet 2 inches, let the point *f* be fixed at that height above the base-line *d e*. Draw the line from *f* to *c*, which is the direction of the line of draught acting upon the assumed centre of resistance, *c;* and if the plow is in proper trim it will coincide also with the ring of the clevis; *e c f* being the angle of draught, and equal to 20°. It will be readily perceived, that with the same length of hames, the angle *e c f* is invariable; and if the plow has a tendency to rise at the heel, or run on the point, under this arrangement, it indicates that the ring at *b* is too *high* in the clevis. Shifting the ring one or more holes downward, will bring the plow to work evenly upon the base of the landside, or work flat.

If the plow has a tendency to rise at the point of the share, the ring *b* is too *low*, and must be moved by raising it one or more holes in the clevis. If a pair of taller horses be harnessed to the plow, the draught-chains, depth of furrow, and soil (and, by consequence, the point of resistance *c*), remaining the same, we should have the point *f* raised, suppose to *F;* by drawing the line *F* to *c*, we have *e c F* as the angle of draught, which will now be 22°, and the *ring* will be found to be *below* the line of draught *F c;* and if the draught chains were applied at *b*, in the direction *F b*, the plow would have a tendency to rise at the point of the share, by the action of that law of forces which obliges the line of draught to coincide with the line which passes through or to the centre of resistance; hence the ring *b* would be found to rise to *B*, which would raise the point of the share out of its proper direction. To rectify this, the ring must be raised in the clevis by a space equalling that between *b* and *B*, causing it to coincide with the true line of draught, which would again bring the plow to work evenly on the base of the landside, and run flat.

The foregoing principles are substantially such as are adopted by the most experienced plowmen, and, if properly applied, will not only do the best work, but accomplish it with the greatest ease to themselves and their team. If the power (or team) is not rightly applied, good work cannot easily be done; for if the plow inclines in or out of the ground too much, or takes too wide or too narrow a furrow slice, the plowman must exert force to direct it properly, in addition to that required to overcome the obstacles and inequalities in the soil, but if the power be rightly applied, the plow will move so accurately as not only to perform good work with more ease to both plowman and team, but, in soils free from obstruction, even without being guided.

To effect a proper horizontal movement, the clevis at *b* or draught-rod (if one is used instead of a clevis) must be adjusted and confined at that point, moving it to the right or left, if necessary. This will cause the plow to take the proper width of furrow slice, which, in sod, should be wider or narrower according to the depth of furrow, or rather the thickness of the furrow slice required; for as the thickness is increased so also must be the width, in order to turn it easily and perfectly over, particularly when the furrow slices are required to be laid over level and side by side. The proportion in ordinary sod should be 6 by 12 inches, or 7 by 13 inches. In determining the width of furrow slice, some regard must be had to the strength of the particular sod to be turned; for the same plow will turn over a wider slice in a strong or stiff sod, than when running in one more easily broken, or it will cripple and double when raised to a perpendicular position, thus only doing the work called "cut and cover." When the slices are required to be laid at an angle, and lapped each one upon the preceding, the proportion of width should be less, or about 6 by 10 inches; for the narrower the slice in proportion to the depth, the greater will be the inclination of the slice as it is lapped upon the preceding one.

The Cutter.—Simple as it appears to be, this is a very important appendage to the plow, as it cuts the furrow slice from the main land with great *ease* and *precision*, requiring much less power of team than when the slice is broken or torn off (which is always done when a cutter is not used), and the precision adds much to the quality and beauty of the work, leaving the slice true and straight upon the edge. Much depends upon the cutter being properly formed, and set so as to cut the furrow slice in the shape best adapted to turn and lie as required. The cutter can be raised or lowered at pleasure, to cut shallower or deeper, or it can be detached entirely, which always should be done in plowing rocky, or very rough or rooty land. The cutter is very useful at the South in cutting up the crab, and other tough grasses, thus enabling the plowman to cover them up completely with the furrow.

In order to turn the furrow slice completely over, and do what is termed flat-work, or planing, the cutter should pass down from the centre of the beam, about three inches forward and above the point of the plow, *standing out* in a line with the face of the landside, so that by placing a straight edge along the face of the landside, and forward past the cutter, it shall touch the point of the cutter. This position causes it to cut slightly under the improved land

and leave the furrow slice bevelling upon the edges, and when turned over the upper corner will have receded a little from the sod land, and thus admits the succeeding slice to drop in *flat* by its side.

To lay the furrow slices inclining, and lap them one upon the other, the cutter should pass down perpendicularly from the landside of the beam in such a way as to cut the edges of the slice at right angles with the sides. Whether the cutter be attached at the side or through the beam, it can be bent so as to stand in either position.

The Wheel.—Many advantages are realized in the use of the wheel on the plow, particularly in turning sod. It serves as a gauge to regulate the depth, and can be raised or lowered as required. It admits of the plow being drawn by a proper length of chain in any soil; and, with the aid of the wheel, the plow moves steadily and accurately along, being less affected by any irregular movement of the team; thus performing the work more uniformly, and with greater ease both for plowman and team, and the plow is thereby thus drawn at a convenient distance from the team.

The Draught-rod.—By the use of the draught-rod, the liability to break the beam is greatly diminished; and being placed so far from the end, it is not liable to be pulled out when doing heavy work; and another advantage is, the gauge of the plow is more easily, accurately, and surely fixed with the draught-rod than with a common clevis.

The *Dial-clevis* is a recent improvement, which is shown in Figure 2. By the use of this, in connexion with the draught-rod, the plow can be made to perform its work at any required distance on either side of the team, and the depth of the furrow can be gauged to any depth. This will enable the plow to work close up to the fence, or the side of a ditch, or turn a furrow in its appropriate place, while the team are walking on the sod, or unplowed ground.

Advantages of the Improved Plow.—There are three prominent advantages in the use of the best modern improved plows. 1. They are smoother and better made, and more durable, without costing as much as the old-fashioned plow. 2. They do the work much more effectually, cutting a deeper, wider, more even, and truer furrow. 3 They will do the work with much less expenditure of team power. They will also, when properly constructed, pulverize the earth as they lift and turn it over, thus effecting that minute and general separation of the particles of the soil, which is so essential in preparing it for the ready admission of the rootlets of the plants, and enabling them to draw their food from every portion of it. Another advantage consists in the fact, that all the parts of the plow, both wood and iron, are made from the same moulds, and are therefore all precisely alike. When any part gives out, it can easily be replaced by other parts which have been made by the manufacturer, and which may always be purchased with the plows

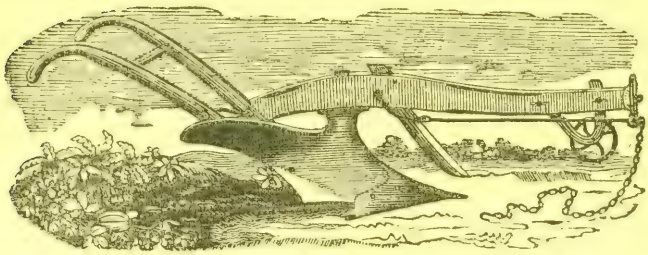


Fig. 2.

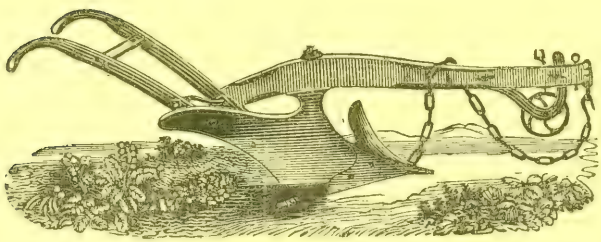


Fig. 3.

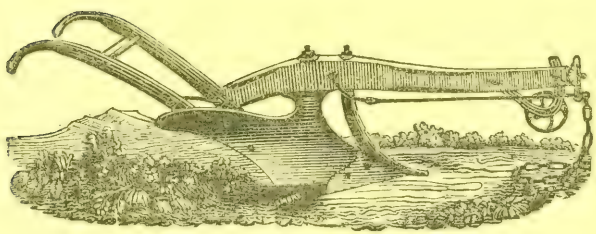


Fig. 4.

Explanation of Cutter, Coulter or Fin-Cutter, and Lock-Coulter

It is proper here to explain the difference between a *cutter*, a *coulter or fin-cutter*, and *lock-coulter*, as the terms are loosely used by many as synonymous.

The Cutter, in Fig. 2, is of wrought-iron, edged with steel of the best quality. It passes through a mortice in the centre of the beam, where it is fastened by an iron clamp, and reaches down nearly to the point of the share. It can be raised or lowered at pleasure, or be taken out of the beam entirely. It is also clasped on the side of the beam when required.

The Coulter or Fin-Cutter, in Fig. 3, is cast on to the point of the plowshare and thus forms a part of it.

The Lock-coulter, in Fig. 4, is also made of wrought-iron, steel-edged. It passes through the beam, and is made fast with a nut and screw or key, and locks through the point and mould-board where they join. This gives it great strength, and makes the plow suitable to be used among rocks, and especially the roots of newly-cleared land, for the lock-coulter cannot be turned on one side nor forced out of its place.

The Cutter, Coulter or Fin-Cutter and Wheel are applicable, and are attached when desired, to all sizes of plows, excepting the smaller sizes; and one or all are used upon the same plow as may be desired.

DESCRIPTION OF THE GENUINE IMPROVED EAGLE, SELF-SHARPENER, SUBSOIL, AND OTHER HIGHLY-FINISHED PLOWS.

These are made by the proprietors from patterns of their own peculiar invention; and in the great variety of sizes, forms, and fixtures, are found those adapted to all kinds and conditions of soil, and modes of culture, in the different parts of the Union.

In the construction of the wood part of the plows, they use machinery particularly adapted to that business, which has been patented, and is used only by themselves. This forms all plows of the same size precisely alike, and insures a uniform operation. They are readily taken apart, and can be put up for distant transportation; and when any part is needed for repairs, the manufacturers furnish cheaply all such pieces required, which are sure to fit, and the farmer is at once accommodated. The parts are easily attached, and it is not necessary to carry the plow to a distance to be repaired by inexperienced hands.

The timber of which these plows are made, is second-growth white oak, and is so widely and favorably known as to require no remarks.

The mould-board, landside, and point are *ground* and *polished*, and coated with blue varnish to prevent rusting, which gives them the appearance of blued steel. They are thus fitted to use in the most adhesive soils, so that the dirt will not stick and impede their progress; and they are fast taking the place of wrought-iron or steel mould-boards, so much used in the rich lands of the Southern and Western States, as they move equally free, and cost much less.

The iron of which they are made, is composed of an admixture of several kinds, which produces a metal of far greater strength and durability than the ordinary iron used for the purpose, and it thereby

endures safely the chilling process which is applied to the *point* and *wing* of the share and *base* of the landside. This process insures at least one hundred per cent. more service in those parts so soon worn out in other plows.

The superiority of the IMPROVED WORCESTER EAGLE PLOWS has been so thoroughly established, and is now so widely known, that it would seem superfluous to dwell upon it. To such, however, as may not be familiar with their great success, it may be proper to mention the astonishing fact that over FOUR HUNDRED PREMIUMS have been awarded to these plows and the plowmen who have used them, by the different Agricultural Societies in the United States and elsewhere. They have encountered the strongest competition, but have everywhere been successful. This is owing, not only to their superior workmanship before mentioned, but also, in a high degree, *to the superiority of the mechanical principles upon which they are constructed.* The draft, or power, required to move these plows in turning a furrow of any required width or depth, is less than any of the plows used in competition with them, as was conclusively shown in a very carefully-conducted trial in Massachusetts, where the dynamometer, (an instrument for measuring the exact amount of power,) was used, and every precaution was adopted to avoid mistake and insure impartiality. In this trial, it was found that, while the larger sizes of these plows required but 425 lbs. to move them, the best three of all others offered in competition required respectively, 450, 487, and 512 lbs. to perform the same work. The Committee of Judges in Essex Co., Mass., on Plows and Plowing, who made the most elaborate and perfect investigation of plows ever made in this country, in speaking of the Improved Eagle Plow, to which they unanimously awarded the highest premium, say :—"As nearly as we can ascertain, this plow combines all the good qualities manifested in either of the others, with some peculiar to itself. Our attention was called to the *quality of the castings* on these plows, their *finish and durability.* Their appearance is certainly more perfect than we have elsewhere seen. The process of *chilling the points*, the entire edge of the share, and flange or base of the landside, give a permanence and durability to the work, that renders it decidedly of a superior character, and we think there is no hazard in saying that the value of the parts thus made is more than doubled by the process."

We have only to add, that the high yet just praise above awarded to these celebrated plows, is fully corroborated by the experience of thousands of practical farmers and planters who have since annually purchased and used them.

Please to take particular notice that we are the EXCLUSIVE AGENTS for the sale of these plows in New York, and any others offered as "Eagle" are COUNTERFEITS and an inferior article.

EAGLE No. 20.

A four-horse plow, adapted to free alluvial soils, where wide and deep furrows are desirable, and well calculated for turning under a *large growth of stubble, weeds, or green crops.*

EAGLE No. 36.

Is a light-sod plow, easy of draught, and particularly adapted for horses, and suitable also for stubble or crossing, the wing of the plow throwing over more than Eagle 1, 2, or 9.

EAGLE No. 0

This is the smallest size of the Eagle-Plow. It is suitable for one horse at the North, or two mules at the South. It is of very easy draught, and possesses great merit for a small plow.

EAGLE No. 1.—*With Wheel and Cutter*

(See Fig. 2.)

[For uses and advantages of Wheel and Cutter, see Remarks on Plowing, pages 6 & 7.]

Eagle No. 1 is called at the North a *medium*-sized Sod or Stubble-Plow, and is easily drawn by a pair of horses or oxen. At the South it is considered a large size, and will generally require three mules to turn a furrow with it, six inches deep and eleven inches wide, although this has often been accomplished by a single pair. It cuts a furrow any required depth from seven to ten inches and from ten to twelve inches wide.

EAGLE No. 1.—*With Lock-Coulter.*

[For form of Lock-Coulter, see Fig. 4.] This is the same size and shape, and performs the same work as Eagle No. 1 with *cutter.*

EAGLE No. 2.—*With Coulter, or Fin-Cutter and Wheel.*

(See Fig. 3.)

A two-horse Sod or Stubble-Plow, of same construction, but one size larger than Eagle No. 1 It cuts a furrow any required depth from eight to twelve inches, and twelve or fourteen inches wide.

EAGLE No. 25. *With Wheel, Cutter, and Draught-Rod.*

(See Fig. 2.)

A four-horse Sod or Stubble-plow. It is also admirably adapted for breaking up rough ground and trench-plowing. It is the best plow for covering up a *great growth of weeds, stubble, and grass.* It cuts a furrow any required depth to twelve inches, or even deeper, and sixteen to eighteen inches wide.

SWARD C A strong three-horse plow, particularly intended for breaking up deep, rough, or stony sward soils. It is larger than Eagle No. 2.

SWARD B. A strong four-horse plow of same construction nearly as sward C, but one size larger

SWARD D. *For Reclaiming Meadows.*

A strong four-horse plow, same size and form as sward B, with the addition of a wrought *lock-coulter* as attached to fig. 4. To this plow is affixed, when required, a sharp steel-edged share or point, cutting very wide, and a reversed or drag-*cutter* for the purpose of plowing and completely turning over the surface of wet meadows, when drained by ditching. A crane or dial-clevis is attached to the end of the beam, which enables the off ox or horse to keep clear of the miry open furrow, so very fatiguing to him, and tread on the *unbroken* ground, thus making it comparatively easy work for the team, and obviating the great objection to breaking up wet meadows or swampy ground The newly invented dial-clevis and draught-rod, as before described, will enable the off horse to tread on solid ground in plowing wet meadows, nearly as well as the crane-clevis. This is an admirable plow for the wet lands on the Mississippi, and for the prairie lands of the West. When the fixtures for meadow plowing are removed, and the original point or share is replaced, the plow is again adapted to the rugged upland soils, thus answering the double purpose of an upland and meadow-plow.

EAGLE SELF-SHARPENING AND ADJUSTABLE STEEL-POINTED PLOWS.

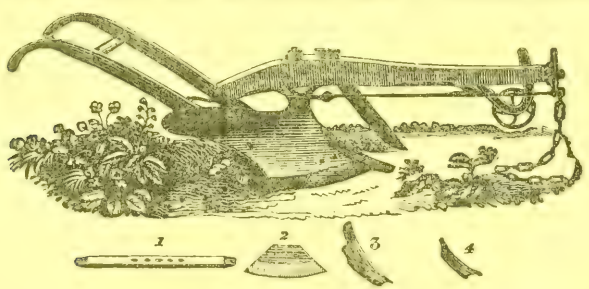


FIG. 5.

These have the same superior form and general construction as the celebrated Eagle-Plows, with the exception that the point and share consist of two pieces, which are made on an *improved self-sharpening principle*

The point, as shown detached at No. 1, fig. 5, is simply a bar of *wrought-steel*, about twenty inches long, which passes upward into the body of the plow, where it is confined with one bolt. As it becomes shorter, and worn on the under side, it is readily moved forward and the under side turned up, thus always presenting a sharp point of *full length* and *proper shape;* when one end is worn off five inches, the other end is placed forward and performs a like service. The wing or share, as shown detached at No. 2, is made of either wrought-iron with steel-edge or of cast-iron, and is also reversible, being used either end forward or either side up.

Both point and share are so very simply constructed, that any blacksmith can replace them at trifling expense, or perpetuate the use of the original by new-laying with steel, as they become worn.

There is a coulter of cast-iron a little back and above the point, as in fig. 3, page 8, and shown detached at No. 3, fig. 5, forming part of a cap, shown detached at No. 4, which protects the shin or forward part of the mould-board. It is confined in its place by the same bolt that confines the point, and is cheaply replaced when worn. This is much less expensive, and in many kinds of soil quite as serviceable as a wrought coulter or cutter, as shown by fig. 5 They are sold with one or both, or with simply the cap.

These plows are particularly suited to Southern plantations, as the blacksmiths can easily repair them

Self-sharpening points and shares have been considered objectionable, inasmuch as they have not possessed sufficient strength, owing to their complicated construction of cast metal; but a single glance at these plows will convince any person, that by constructing the point and share of *wrought-steel*, they combine strength and durability unsurpassed by any other, and that they are kept in repair at much less trouble and expense.

The point can be used projecting more or less forward, causing the plow to incline more or less into the ground, as different soils may require.

EAGLE SELF-SHARPENER, No. 1.

A light one-horse or mule-plow.

EAGLE SELF-SHARPENER, No. 2.

A medium-sized one-horse plow, useful at the North and South.

EAGLE SELF-SHARPENER, No. 3.

A medium-sized two-horse plow, for sod or stubble-land.

EAGLE SELF-SHARPENER, No. 4.

A large-sized two-horse plow.

EAGLE SELF-SHARPENER, No. 5.

A strong breaking up plow. It is an admirable implement for breaking up deep, stony, or stiff clay soils.

EAGLE LEFT-HAND SELF-SHARPENING PLOWS.

These are made to turn the furrow-slice to the left instead of the right hand and are constructed upon the same self-sharpening and adjustable steel-pointed principle as described above. They are used in many parts of the West, principally by the German and Dutch farmers. To these are attached, or can be all the different fixtures as to the right-hand plows.

In those sections where three or more horses are sometimes used abreast, the DRAUGHT-ROD has a very great additional advantage, as the plowman readily adapts the plow to be drawn either by two or more horses. They are designed to be used with heavy teams in rugged soils, and possess *extra strength of timber and metal.*

LEFT-HAND, No. 40.

Is a size suitable to be drawn by two strong horses.

LEFT-HAND, No. 41.

Is of a heavy larger size, and designed to be drawn by three or more horses

CORN, COTTON, AND RICE-PLOWS, &c.

No. 14.—A light single one-horse or mule-plow, designed for carrying a wide furrow in a light or sandy soil, and well adapted to Northern and Southern culture. The mould-board is longer and more curved than other kinds of plows, and works and pulverizes the soil admirably.

No. 15.—A single horse or mule-plow of same construction as above, but one size larger.

No. A 1.—A light one-horse or mule-plow better calculated for a loamy or clayey soil. It is much used among cotton and corn, as well as for furrowing out or drilling.

No. A 2.—A single horse or mule-plow, same construction as the above but one size larger.

No. A 3.—A two-horse stubble-plow—much used at the North for general plowing; and is highly approved for breaking up rice and cotton-lands of the South.

No. B 1.—A large one-horse plow; is frequently used with two horses, and for the same purposes as No. A 3.

No. B 2.—A small two-horse plow, same as the above, but one size larger. It is much used both in the North and South.

Davis 6 Inch.—A light one horse or mule-plow, particularly designed for the South.

Davis 7 Inch.—Of nearly the same construction, but a size larger than the above.

Rice Trenching-Plow.

This plow is made from a pattern furnished by an eminent Southern planter In trenching a field for the rice-crop, it will do the work of many hands with hoes, and will be found a great labor-saving implement for this purpose. It is an excellent implement, also, for opening drills for corn or cotton, and for various root-crops.

Ridging or Double Mould-Board Plows.

No. 1 —*Double-Mould Board.*

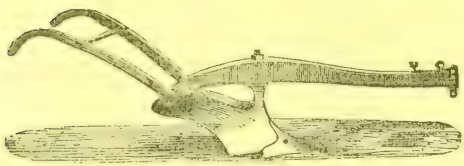


Fig. 6.—*Side View.*

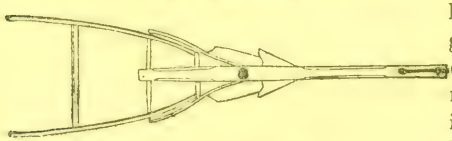


Fig. 7.—*Top View.*

A light one-horse plow, used for opening drills to plant potatoes, corn, &c. In plowing out between narrow rows, it throws the dirt both ways to the plant, and thus does the work of two plows. It is also very useful in digging potatoes. It is a very convenient implement for various kinds of work, ditching, &c., and should always be kept on the farm.

No. 2 Double Mould-Board.—Of same construction and use as the above, but one size larger. This is also used in furrowing for planting cane, and making light ditches. It has an extra point made, of an additional width, for the purpose of digging potatoes.

The Fluke,—*or Double-Expanding Mould-Board Plow, for Planting Sugar-cane.*—This is a plow recently made, expressly for the use of sugar-planters, by which a furrow is made ten to twelve inches wide, and four to five inches deep.

Paring-Plow.

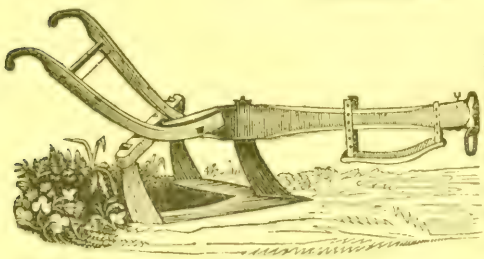


Fig. 8.

Fig. 8 is a plow used for paring turf-lands preparatory to burning The share is thin and flat, made of wrought-iron, steel-edged. It has a lock-coulter in the centre, and short coulters on the outside edge of each wing of the share, cutting the turf as it moves along into two strips about one foot wide, and as deep as may be required.

After the turf is pared off in strips, the hands follow with sharp spades and cut it into suitable lengths, say of two or three feet. These pieces are then thrown into heaps, and after drying, they are burned, and the ashes spread broad-cast on the lands. Paring and burning is a very ameliorating process for stiff, clayey soils; it changes their mechanical texture, and renders them friable and suitable for cultivation. Light sandy soils should not be burnt.

Side-Hill or Swivel-Plows.

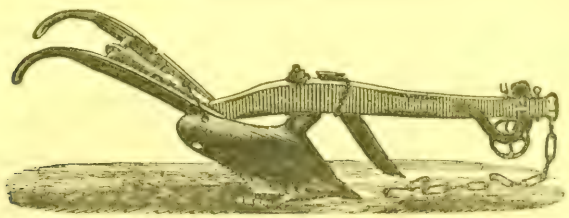


Fig. 9.

Of these there are five different sizes. They are so constructed that the mould-board can be instantly changed from one side to the other, which enables the operator to perform the work horizontally upon side-hills, going back and forth on the same side, and turning all the furrow-slices with great accuracy downward. They are much liked at the South; for, by this system of turning and laying the soil, it is prevented from being washed into those deep gullies so destructive to the general face of the country. They are employed, and by many are much approved, for level plowing, as this leaves the

field without any centre-dead or finishing furrow; nor does it make banks or ridges by turning two furrows towards each other. When thus used they save much labor, by allowing the team to turn short about at the end of the furrows, instead of obliging it to travel across the wide ends of each land in the field. They are useful for plowing down the banks of ditches, as they carefully turn the furrows from the ditch by carrying the earth upon the level ground.

No. 0.—Side-Hill.

A light one-horse or mule-plow, more particularly designed for horizontal plowing at the South.

No. A 1.—Side-Hill.

A light or medium-sized two-horse sod or stubble-plow.

No. A 2.—Side-Hill.

A large two-horse plow—is sometimes used with three or four horses, according to the nature of the soil.

No. A 3 —Side-Hill.

A large four or six-horse plow, made very strong. It is suited for very heavy farm and road-work.

No. A 4.—Side-Hill.

A heavy road-plow. It is made very strong, and is especially designed for the roughest road-work.

With wheel and cutter, the medium sizes are highly approved for turning over mowing land for the purpose of re-seeding in the autumn, as with the cutter they lay the furrow-slice flat, and with great uniformity, avoiding the centre and bank furrows, and leaving the land the same general level as before plowing.

SUB-SOIL PLOWS.

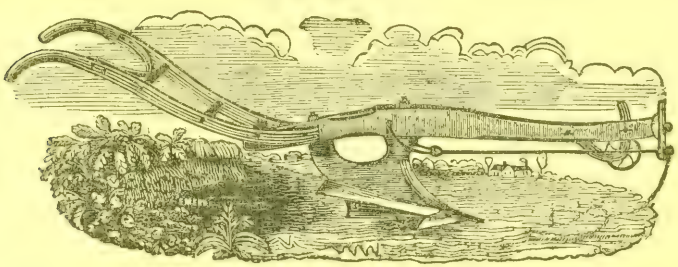


Fig. 10.

There are four sizes of these, all of which are constructed on the principle of the most approved Scotch Sub-soil Plow, one of which was imported from Scotland for the purpose of furnishing the most approved model. By modifying and simplifying its construction, at the same time making some important

improvements, the farmers and planters of this country are now supplied with plows lighter than the Scotch Plow, yet better adapted to our soils, and of equal capacity, at a much less price

They are now much used in different sections of the United States, and with great satisfaction, and the demand for them is constantly and rapidly increasing. These plows are used by following directly after the team which turns up the surface-soil, and in the same furrow. This is of great advantage to the crops, both in dry and wet land. In the former, the sub-soil being deeply broken up, and well pulverized, the moisture is retained much longer than it otherwise would be, and the roots of plants can descend much lower and wider for their food; while in the latter, the excess of moisture filters below, and is readily carried off. They, however, require that the earth below them be sufficiently porous to admit of the escape of an excess of moisture, or their beneficial use is not felt till the land is well drained.

No. 0.—Sub-soil.

This is a one-horse plow at the North, and is used with one or two mules at the South. It will break and pulverize the sub-soil any required depth to six inches below the previously-turned furrow.

No. 1.—Sub-soil.

Is a medium size, and is mostly used in ordinary clear soils, with two or three, and sometimes four horses. It will run twelve inches deep.

No. 2.—Sub-Soil.

A large plow. It will break and pulverize the soil any required depth to eighteen inches.

No. 3.—Sub-soil.

Is about the same size as No. 2, but is used with either a single or double wing point, and with an inclined plane to raise the soil upon one or both ends at the same time.

We recommend the use of the draught-rod on all sizes of the sub-soil plows, as we consider it almost indispensable in enabling the off animal to walk on the solid ground, and the plow to work easily in the surface-soil furrow

NEW YORK AND OTHER PLOWS.

As many farmers and planters require plows of similar construction to some of the preceding, and at a cheaper price, the following sizes and numbers have been extensively manufactured by ourselves, for this purpose. They correspond in size, weight, and form with the preceding, and are made with equally good materials, but they are not so highly finished, nor are the irons ground and polished.

New York No. A 1.—A light one-horse or mule-plow, does well for loamy soils and clay.

New York No. A 2.—A size larger than the above, and suited for the same kind of soils.

New York No. 14.—A light one-horse or mule-plow, for light sandy lands

New York No. 15.—A size larger than the above, and intended for the same kind of soils.

New York No. B 2.—A light two-horse plow for general work.

New York Eagle No. 1.—A medium two-horse plow.

New York Eagle No. 2.—A large two-horse plow, for various work and soils.

One-Horse Corn-Plows.—No. 10		No. 1, J. M. & Co.'s
No 60	" 11.	" 2, " "
" 80	" 12.	" 18, M. & H.
" 81	Corn.	" 19, "
Cabbage Plow.	Seed.	

Two-Horse Plows.—No. 19½, M. & H.		" 1½, Dutcher's.
	" 20, "	" 2, "
	" 21, "	" 3, J. M. & Co.'s
	" 13¼,	" 4, "

Bergen Plows—For two-horse and general work.

Castings for the New York, Eagle, Minor and Horton's, Mayher & Co.'s Freeborn and Hitchcock's, Dutcher's, and other plows.

Three-Share Plow.

This machine spreads two feet six inches wide, with three shares; but if made with four shares it would be proportionably wider. It is used for plowing in wheat, rye, and other grain, after sowing; and taking so many furrows at a time, it gets over the ground very rapidly. Three to five acres per day may be covered with it. Grain plowed in is not so likely to winter-kill. The ground should not be harrowed in the fall, but be left rough. In the spring it may be harrowed and rolled. It is drawn by two horses. One or two wheels are now placed at the end of the beam, which makes it run easier and steadier, and enables the plowman to gauge the furrow-slices to an exact depth. It has been supposed that this plow would do well for the South to work out between the corn, cotton, and sugar-cane rows; but we believe it is too heavy for such work with single mules.

Scotch Plows.—These are made of iron throughout, and will be imported to order. They cost from $25 to $40 each.

SOUTHERN PLOWS.

We have recently constructed a series of plows, of various numbers and sizes, on the same principle as the above, with higher or longer standards. This sets the beam from two and a half to four inches higher than in the same sizes of Northern plows. Thus constructed they do not clog in the foul, moist, and weedy lands, but clear themselves perfectly, and move along with great ease and rapidity.

In addition to the fore-named we have various other plows suited to every locality in North and South America, and the West India Islands; among which are steel-points and shares, steel and wrought-iron mould-boards. From our facilities for manufacturing these, and implements of almost every description for the farm, plantation, and garden, can be made to order at short notice.

CULTIVATORS.

The Cultivator is a great labor-saving implement, for stirring the earth between the rows of corn and other crops. It is also well adapted for mixing manures in the soil, and pulverizing it after plowing. It leaves the soil much lighter and in better condition to receive the seed than when the harrow only is used. It is useful for covering grain sown broad-cast, and buries it at a more suitable and uniform depth than the plow, and in one-fourth the time; and much more perfectly than the harrow.

There are various forms of teeth. Some enter and stir the soil deep; others are broad and flat, to skim the surface and cut up the weeds, while others are made with scarifiers or narrow teeth; and as all are made to fit the same size and form of mortice, by purchasing different forms of teeth, the farmer can use them in the same frame-work.

They are made to expand and contract, to conform to the width of rows, &c. Some are made having the hindmost teeth so formed as to turn the earth towards the plants, and by shifting them from side to side, turn it from them, as may be required.

Universal Cultivator.

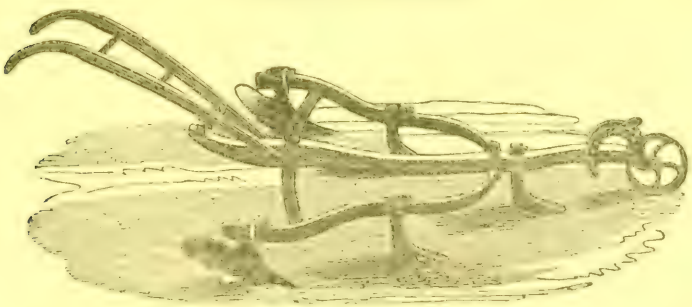


Fig. 11.

Fig. 11, represents a cultivator recently constructed. It is made longer than common cultivators, and is all of iron except the centre-beam and handles; and the side-beams being of wrought-iron so curved, that as they are expanded or contracted, by loosening the iron-key that confines the tooth in its place, they are each moved forward or back to a point that will again cause them to work parallel with the centre-beam and at equal distances from each other. To these are fitted several sets of different formed teeth and scarifiers, of wrought and cast-iron. They are sold with one or more sets.

There is also one pair of teeth calculated to work in the rear, represented by

Fig. 11, which may be used instead of the common teeth. They are in form like small plows, turning the furrows in opposite directions, and fitting alike both side-beams; by changing they may be so placed as to turn the furrows to or from the centre, or rows of vegetables. If the forward teeth are used at the same time, they finely pulverize the soil, and if the plows are set towards each other, they form a light bed in which to plant any kind of seeds. Any form of wrought teeth may be attached to them by blacksmiths, as the manner of fitting them to the beams is very simple and easy. This cultivator is made to expand from two to five feet.

Common Expanding-Cultivator.

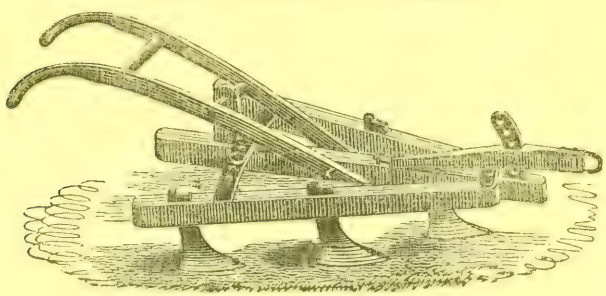


Fig. 12.

Improved Expanding-Cultivator.

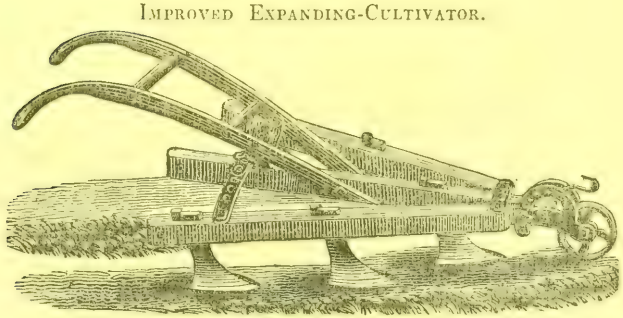


Fig. 13.

The wheel (Fig. 13.) is a late invention, and is found to be a great improvement, as it causes it to move steadily and easily, and assists the operator in getting around the ends of rows and obstructions in the field.

Langdon's Cultivator or Horse-Plow.—This, in reality, is a plow with a light, wide, flat share, sharp at the edges and coulters on the mould-board. It is used for running between the rows of different crops, to cut up the weeds and loosen the soil. It is also an excellent implement for digging potatoes. The shares can be detached and wings added, which converts it into a double mould-board plow. It is only recommended for light soils free from stones.

Cotton-Sweep Cultivator.

This implement is made expressly for the purpose of taking the place of the cotton-sweep, besides doing much additional work. It is made with very sharp steel teeth, so arranged as to cut up all grass and weeds, at the same time finely pulverizing the soil. It can be so expanded or contracted, as to suit every width of row. It works so lightly that one mule can draw it.

Hand-Cultivator.

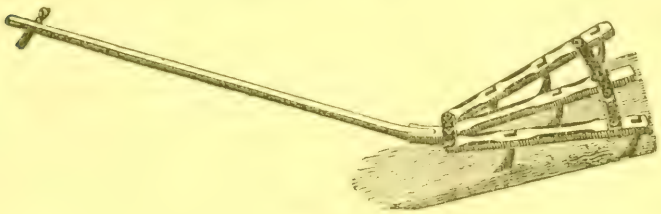


Fig. 14.

This cultivator is made entirely of iron except the handle, and expands from ten to eighteen inches. It is a very useful implement in garden-culture, and is often used in fields, among rows of carrots, beets, &c. It cuts up, and leaves the weeds exposed, and stirs the earth very thoroughly.

ROLLERS.

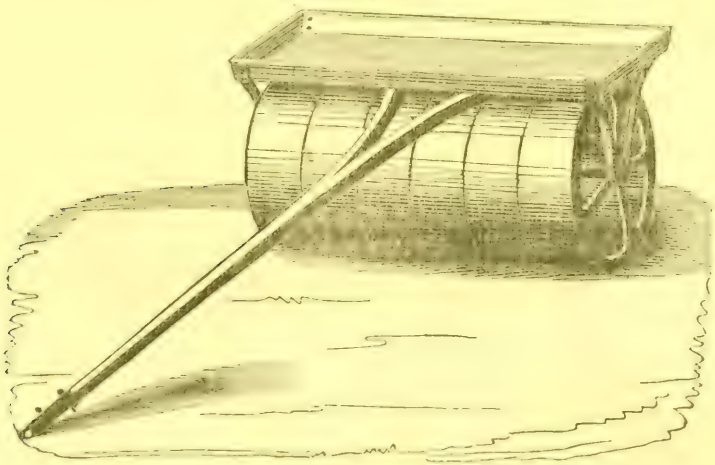


Fig. 15.

These are important implements, and are fast coming into general use. They crush all sods and lumps that remain on the top of the ground after the harrow has passed, and force down small stones level with the surface. They render the field smooth for the cradle, scythe, and rake, press the earth close about the seed, and secure a more sure and quick germination.

On light and sandy lands they are invaluable, and in all cases their use has greatly increased the product. Much benefit is undoubtedly found in

compressing the surface of such light soils, by preventing the escape of those gases from the manure so essential to vegetation, and which are so rapidly extracted by the sun and winds.

Great advantage is gained by rolling early in the spring, while the ground is yet soft. Clay-lands, by heaving, pull to pieces and displace the roots of grain and grasses sown the previous autumn, and the heavy roller presses the roots and earth together to their proper position, when vegetation goes on again, and thus, in a measure, prevents what is termed winter-killing. They are variously made of wood, stone, and iron. Those of iron are most desirable, being less liable to break than stone, and are not subject to decay like wood.

Fig. 15 represents the most approved kind, constructed wholly of iron except the tongue and box, which are of wood. These rollers are made either 18 or 24 inches in diameter, in separate sections, each one foot long, placed on a wrought-iron arbor on which they turn independently of each other, thus turning without much friction and leaving the ground smooth. They are generally used with three to six sections. If four only are required, thills or shafts may be substituted for the tongue, and drawn by one horse, or both may be used alternately according to the team. The box is attached to receive stones, &c., picked up on the field, and for giving weight to the roller according to the work required. They are made of all sizes and weights, so as to be drawn by hand or a team.

HARROWS.

Of these there are many kinds. Of the common triangular form, we make various sizes, from the light one-horse up to the large four-horse harrows.

Triangular Folding-Harrow.

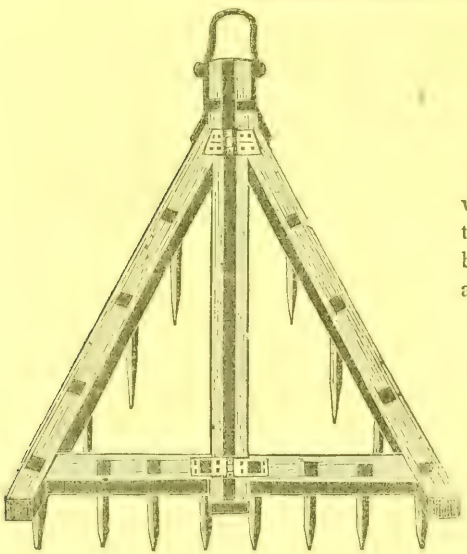


Fig. 16.

Fig. 16 is a folding harrow with teeth constructed like those in the Geddes harrow, but is heavier, very strong and suitable for rough soils.

Scotch Harrow.

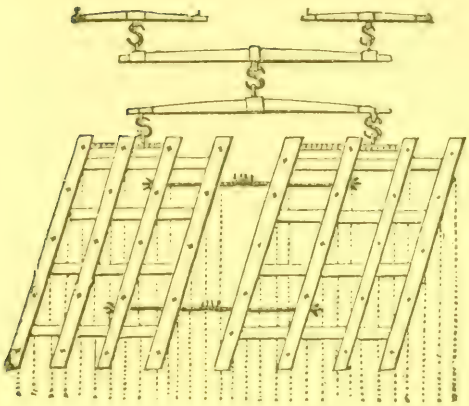


Fig. 17.

Fig. 17 represents the Scotch harrow, which may be used single or double.

Geddes Harrow.

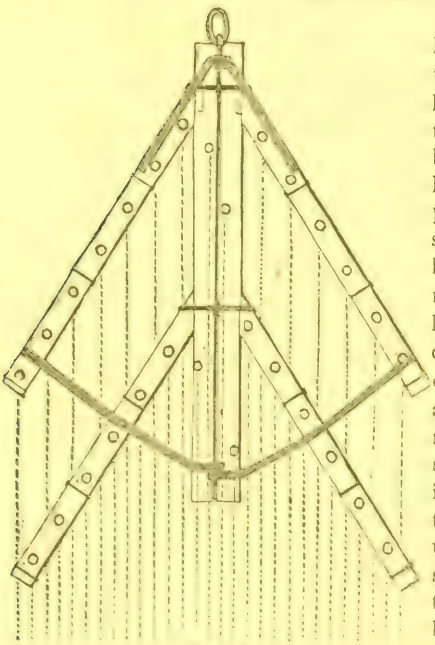


Fig. 18.

Fig. 18 is the Geddes folding-harrow, which is generally esteemed the best. Some of the larger sizes are so constructed, that the front and rear parts can be detached, forming two single harrows, which can be used separately when desired. The two side-frames are joined together by hinges in such a way, that the harrow works the surface of uneven lands quite equally; and when one-half is folded over upon the other, it is easily transported about the farm. The teeth are made of the best Swedish iron, steel-pointed, and the upper end is formed to fit a mortice made tapering from the lower to the upper side of the timber, with a screw upon the upper end of the teeth, and are made fast by nuts being screwed close down upon iron-washers, which prevents all liability of the teeth to become loose and drop out, as in most kinds of harrows. The Geddes harrow is superior to the square harrow, as it draws from one

point, with a regular, not a or straggling motion, and of course is easier for the team. Either part is easily lifted when in motion, to let off any trash that may have collected among the teeth.

Sufficient attention is not paid to harrowing. It is the next most important operation after plowing. The harrow should run from four to six inches deep, cutting up all the lumps, and leaving the ground in a finely pulverized state. These harrows have from fourteen to thirty teeth.

SEED-SOWERS, &c.

Improved Brush Seed-Sower

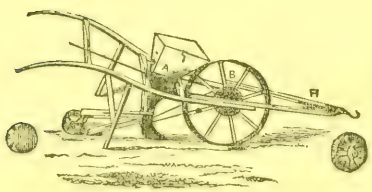


Fig. 19.

This machine, with all its essential parts, has been long in use in this country and in England, and is found to be the only one that plants all the variously formed small seeds rapidly and with precision. The cut represents the machine with the hopper and apparatus for sowing the small garden-seeds, such as onions, turnips, carrots, parsnips, beets, &c.; and also millet and other small grains in drills. It it easily arranged to plant a greater or less quantity, as may be required.

By substituting another hopper, which fits in the place of the present one when removed, and with different dropping fixtures, peas, beans, corn, &c., may be planted in drills, or in hills from 6 inches to two feet apart. It is but a moment's work to exchange one for the other, and in this, the quantity of seed planted is easily regulated.

The operator moves forward as with a wheel-barrow, when the drill is opened, and the seed is deposited, covered, and the soil compressed at a single operation. An acre with rows two feet apart, is easily sown in three hours. Directions for using, accompany each machine.

Bachelder's Corn-Planter.

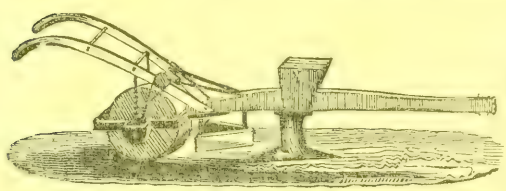


Fig. 20.

This is one of the best machines we have yet seen for planting corn. The seed is put into the hopper above the beam, and as the horse moves along, the share below opens the furrow; the corn is then dropped by arms moving horizontally. These arms have holes that can be altered to a proper size for receiving any required number of grains, and as they pass in and out of the hopper, the holes are filled with the seed,

which is dropped into a tube conducting it to the bottom of the drill made by the share, that is so formed that it passes under the surface at any required depth, where the grain is deposited without turning over the earth. A triangular iron follows to remove all lumps and stones, and a roller to compress the earth over the seed. The dropping of the seed is always visible to the operator, and thus ensures his work being perfectly done. The arms are made to drop the corn nearer or further apart by different-sized wheels fastened on the crank, moving the arms quicker or slower as required. The machine requires a small horse or mule to draw it, and with a boy to tend and drive, will plant from eight to ten acres per day, according to the width of the rows, and at any required distance apart.

Horse-Drill.

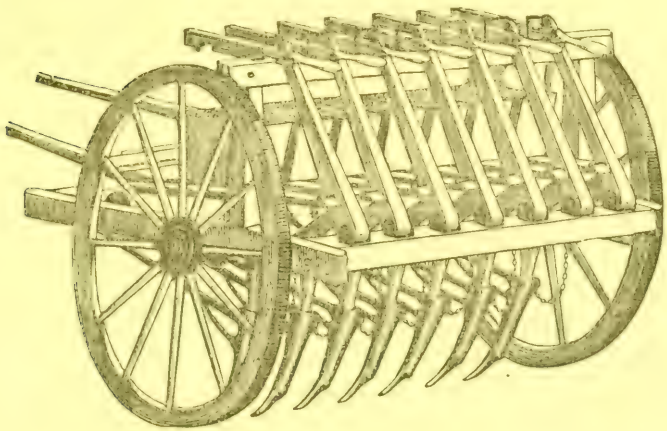


Fig. 21.

This machine will plant wheat, rye, Indian corn, oats, peas, beans, rutabagas, &c., &c.; and can be regulated to drop any required quantity on an acre.

The drills can be thrown in or out of gear separately, so as to plant a field of any shape without seeding any part twice. They are so arranged as to operate equally well on all kinds of land—hilly and rough, as well as level and smooth. A man with two horses, can put in from 10 to 12 acres with wheat in a day; and with one horse, he can plant 20 acres with corn per day.

Cotton Seed-Planter.

Both the corn-planter and horse-drill above described, are easily adapted to sowing cotton-seed, and can be made to do the work of six or eight hands, and much more perfectly than can be done by them.

HAYING AND HARVESTING IMPLEMENTS.

Snath and Scythe.

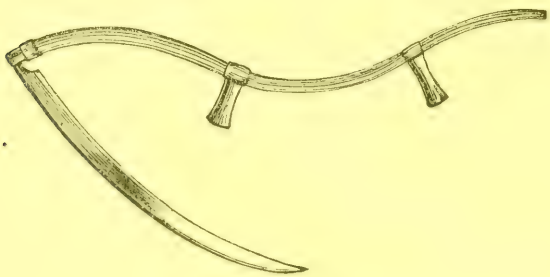


Fig. 22.

A great variety of snaths from different makers and of various qualities, and prices, with and without scythes attached, and some very strong, with two heel rings, for bushes.

Grass, Lawn, Grain, and Bramble or Bush-Scythes.

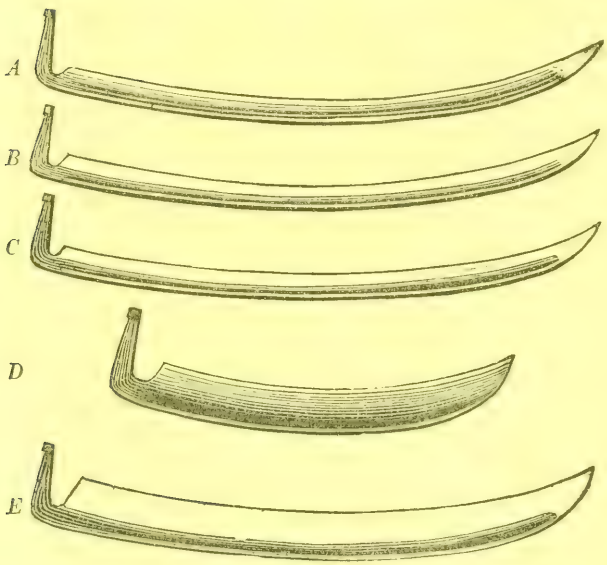
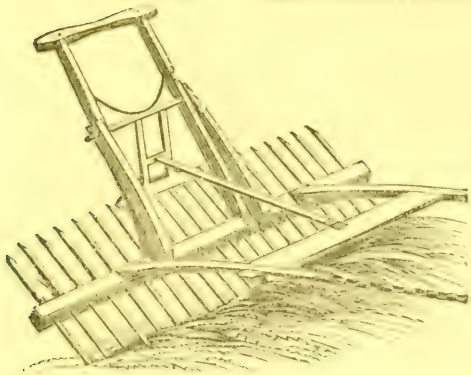


Fig. 23.

The above figures represent the most approved scythes in the market. They are made of the best cast and German double-refined steel, with a double and single-ribbed back, also plain ditto.

FIG. 24. REVOLVING HAY-RAKE.



This implement, with a horse, a man, and boy, will rake from fifteen to twenty-five acres per day. It can be used to good advantage even on quite rough ground.

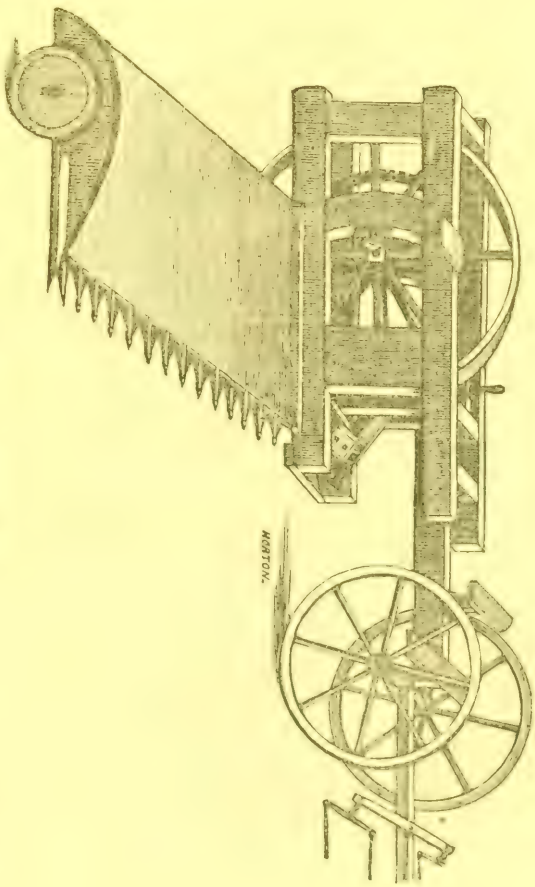
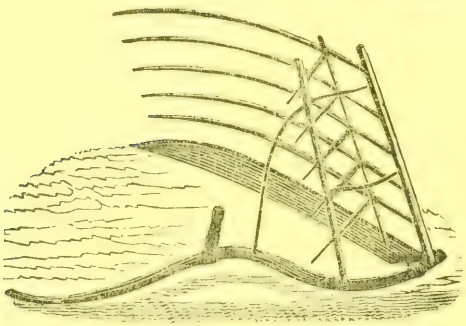


FIG. 25.

REAPING MACHINE.

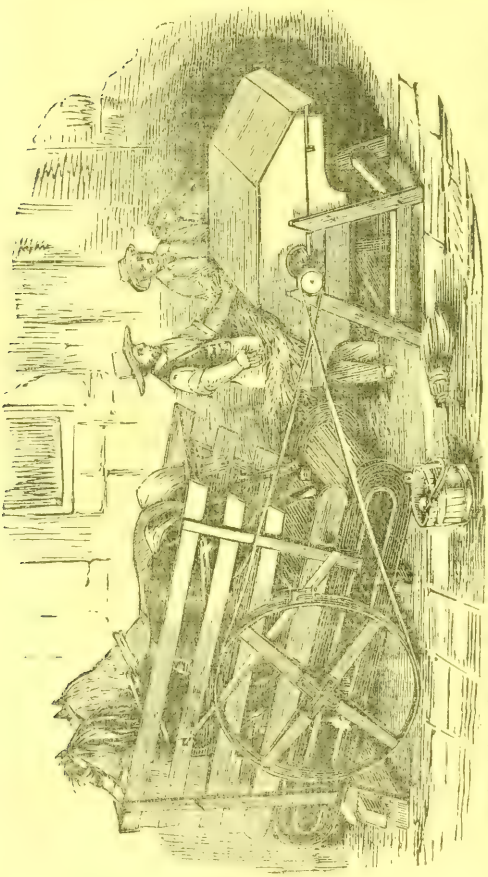
This machine can reap fifteen acres of wheat in a day, and will cut the grain as smooth and clean as can be done with a sickle or scythe. It has low wheels and is drawn by a pair of horses, and cuts a swath five feet wide with twenty knives, working horizontally, which require sharpening only once a day. A man sitting on the side of the platform with a rake, pushes off the grain as fast as it is cut. A field of oats or barley may be cut as neatly and expeditiously as one of wheat or rye. They have been improved to work without wheels.

FIG. 26. GRAIN-CRADLE.



The annexed is of the latest and most approved make, with a superior scythe.

RAILWAY HORSE-POWER AND THRASHER. FIG. 27.



The machine, as delineated in fig. 28, is adapted to the use of one horse, which, with the aid of two men and a boy, can thrash at the rate of seventy-five to one hundred bushels of wheat, or one hundred to one hundred and fifty bushels of oats, in a day. If only a single horse be used, a change should be made every two or three hours, as it is fatiguing to the animal working it. The machine can readily be fitted for working two horses abreast, by increasing the width of the rotary platform as in fig. 27, on which they stand, and increasing the length of the main shaft. The simple contrivance called the *shaker* or *separator*, which is attached to the thrasher, saves much labor in winnowing the grain, besides leaving it entirely free from straw.

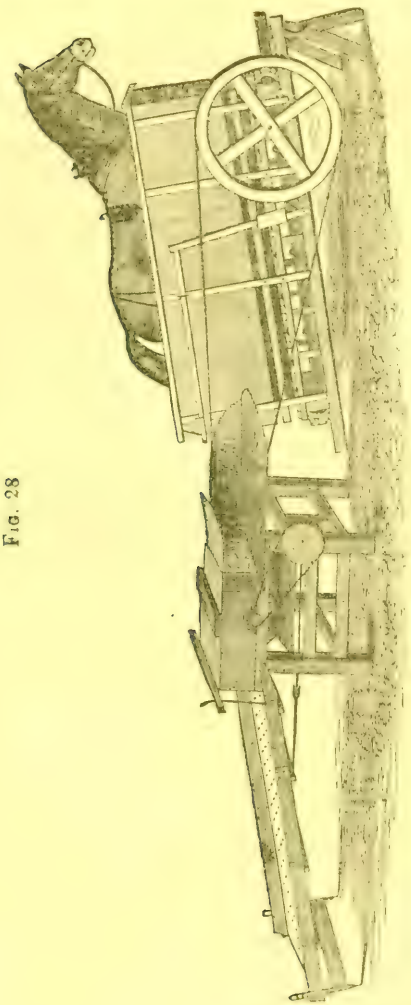


FIG. 28

HORSE-POWER WITH THRASHER AND SEPARATOR.

It will be seen from the preceding and following cuts, that a grain-thrasher is placed on one side of the horse-power, from which it receives its motion by a connecting band. The *separator* is shown in fig. 28, attached to the thrasher, over which the grain passes and is separated from most of the straw and chaff, thereby greatly lessening the subsequent labor of cleaning or winnowing. By the use of two horses, as shown in fig. 27, nearly double the quantity can be thrashed as in the use of one

The above and preceding cuts also illustrate the railroad or inclined plane Horse-power.

RICE-THRASHERS.

A complete thrasher for rice is an expensive machine, and will clean several hundred bushels per day ; but they are too expensive except for large rice plan tations. The small, cheap grain thrashers, are used with economy and advantage, where only a small quantity of rice is raised. The above and several other kinds of grain thrashers are frequently used for this purpose.

FANNING-MILL.

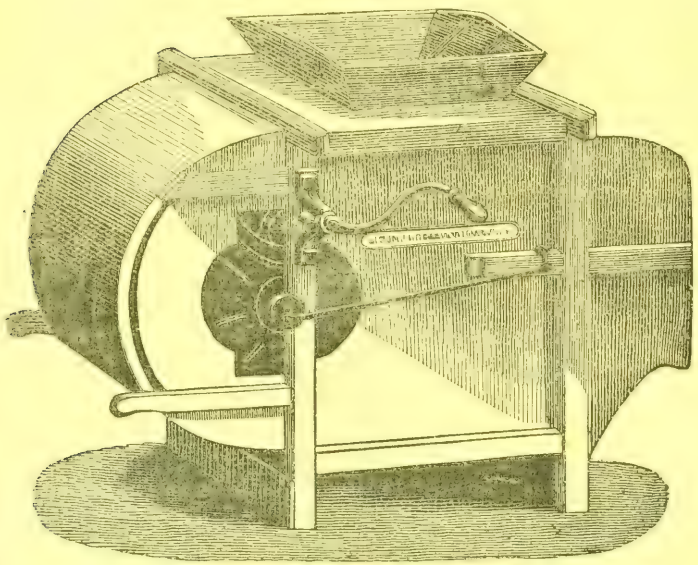


FIG. 29.

Considering the simplicity of its construction, and complete efficiency in all its operations, we think the above fan-mill is the best in use. It has taken the first premiums for three successive years at the State Agricultural Society shows, and various county fairs.

CORN-SHELLERS.

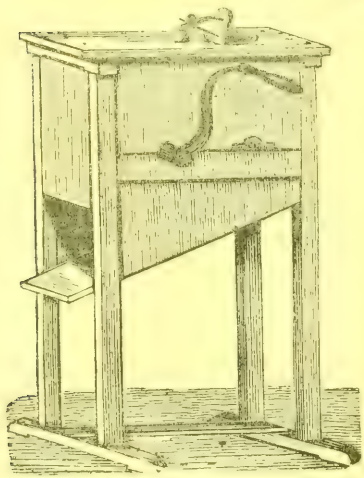


FIG. 30.

These are of various patterns and prices. That in most common use is upon the same principle as Fig. 30. Some, like the cut, are made with wooden frames, and some with iron. The first are preferable, as any one can repair them when broken, and the grain does not fly, or scatter, as it is shelled, the sheling plate being encased with wood, as denoted in the adjoining cut. They will shell from 100 to 150 bushels per day, when operated by one hand.

SMITH'S CORN-SHELLER.

Fig. 31.

This machine consists of a horizontal toothed cylinder, six feet long, and one foot two inches in diameter. The ears of corn, in the operation, are confined to a part of the upper and rising side of this cylinder, by means of a cast-iron concave extending the whole length of the machine; and being admitted into the machine at one end, they are driven through, and the cobs discharged at the opposite end, while the grain falls below the cylinder. The operation is governed by elevating or depressing the discharge end, which causes the machine to throw out the cobs faster or slower; thus securing to the operator the power of finishing his work. This machine is capable of shelling thoroughly one hundred and fifty bushels of ears of corn per hour.

We have several other corn-shellers of various capacities, both to turn by hand or larger power.

HAND CORN-SHELLER.

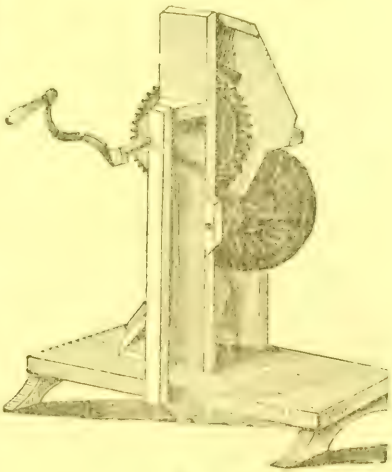
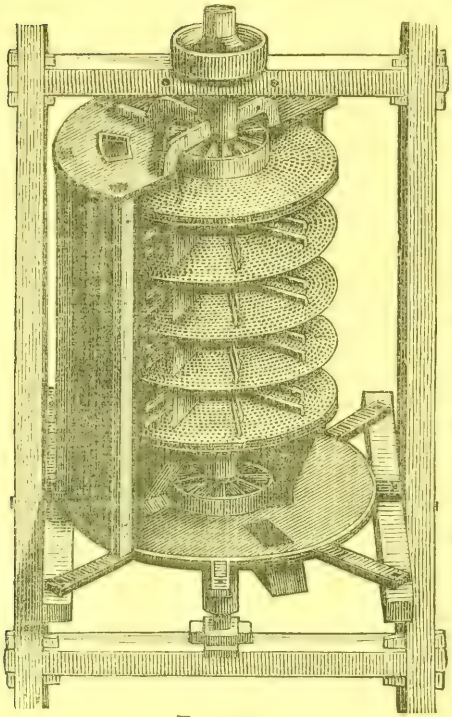


Fig. 32.

This is a kind of sheller much used, and is a very efficient hand machine.

Improved Ventilating Smut-Machine.



This machine has been in use since 1838. Some of them have run seven years without repair, and work in all respects as well as when first put up.

These machines are warranted by the inventor to excel all others in use, and to give perfect satisfaction. The prices vary, according to size, capacity, or fixtures attached.

We have various other kinds and sizes.

Fig. 33.

BARK-MILL, AND CORN AND COB-CRUSHERS.

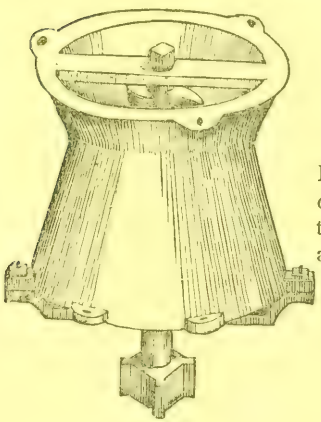
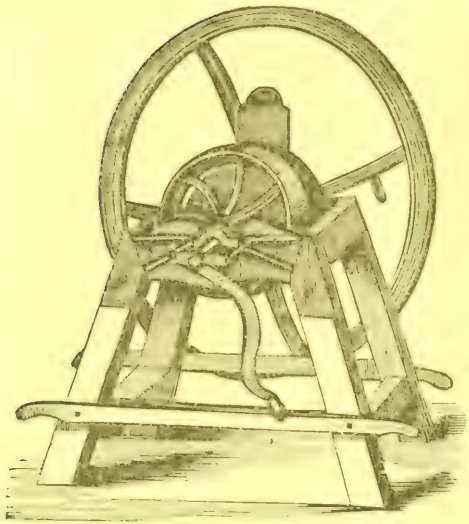


Fig. 34

Bark-Mill.

The Bark-Mill, fig. 34, is much used at the North and West for the purpose of cracking or crushing the corn and cob together, preparatory to grinding between mill stones. These are made of various sizes.

Corn and Cob-Crusher.



This machine is well adapted for plantation use; the construction is very simple, compact, and not easily put out of order. The grinding plates are made of the hardest composition metal, which will last from two to three years After they are worn smooth, new plates may be substituted without difficulty. A strong spiral knife is attached to the axle, which cuts the cob in small pieces preparatory to entering the plates.

Fig. 35.

GRAIN, COFFEE, AND SPICE-MILLS.

Hand and Horse Grain-Mill.

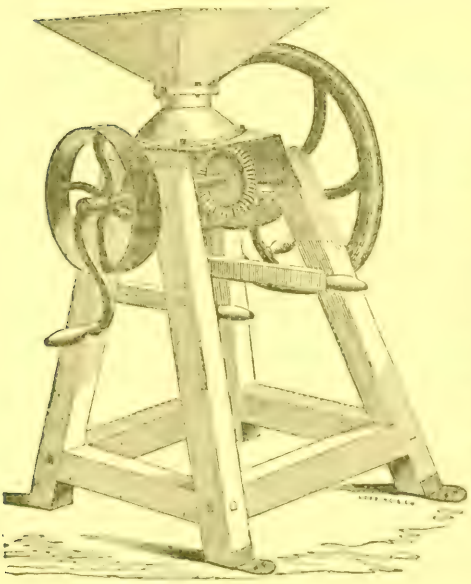


Fig. 36 represents a valuable iron mill, very efficient and durable, to run either by hand or horse power. With the latter it can be made to grind 4 bushels of grain fine per hour, and a greater quantity if coarse. Like the foregoing machine, it is simple, and not liable to get out of repair; and when the plates or grinding surfaces are worn out, they can be replaced by others at a small cost. These can always be had with the machine.

Fig. 36.

Hand Grain-Mill.

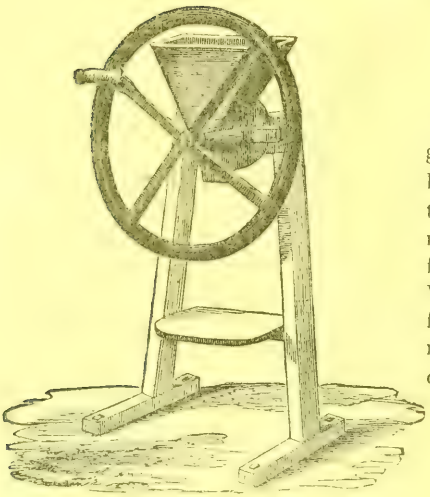


Fig. 37.

Fig 37 is used for grinding grain, coffee, and spices, as desired. It is usually operated by hand, though it can be constructed to run by other power. It grinds from one to two bushels per hour. When the plates or grinding surfaces are worn out, they can be replaced as in the foregoing machine

Coffee-Mill.

Fig. 38.

Fig. 38 is properly a coffee or spice-mill, but will grind grain of any kind. It is sold without a frame, and is so constructed as to be fastened to a post or board in any part of the house; or it can be attached to a simple frame. It grinds from eight to sixteen quarts per hour, depending mainly on the speed at which it is run It may be had with or without extra plates.

Fitzgerald Corn and Flour-Mill.

This is a small conical burr stone, hand or horse-mill, which, when well made and properly put up, is very popular in many of the Southern States This mill is shown attached to horse-power. fiig. 45.

Burr-Stone Mills.

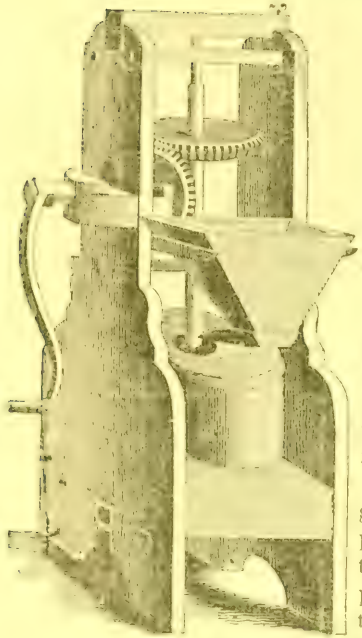


Fig. 39.

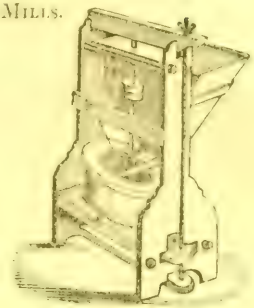


Fig. 39½.

These mills are adapted for grinding all kinds of grain.

16 inch stones grind 2½ bushels per hour
20 " " " 3 " "
24 " " " 3½ " "
30 " " " 5 " "

These mills are ready framed and rigged to attach the power, and are more particularly designed for plantations at the South. When we speak of their performance, it is to be required that they should be driven at a proper speed and with sufficient power.

Rice-Huller.

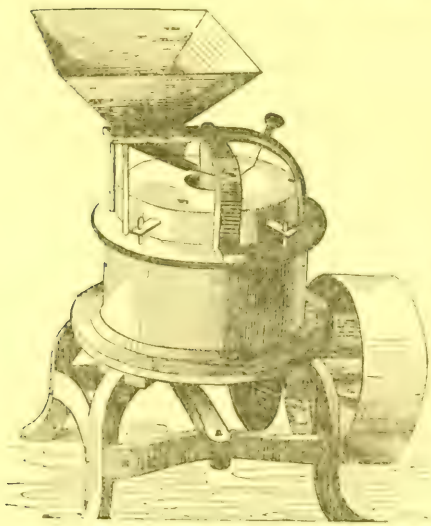
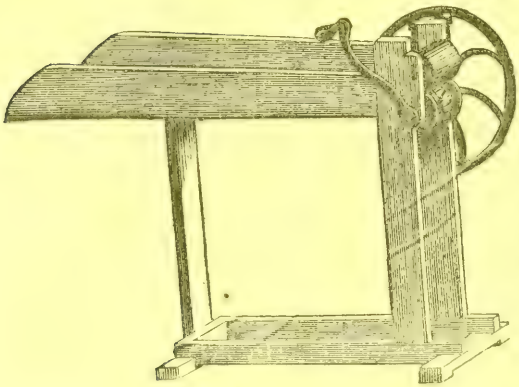


Fig. 40.

This machine is one of recent improvement, and will hull from two to ten bushels per hour, according to its size. We have them of various patterns.

STRAW-CUTTERS.

Allen's Straw-Cutter.



We have this pattern made large, strong, and fitted to go by horse power. One has cut a ton of hay in 50 minutes, by a fair trial, and may be relied upon fo. cutting a ton in an hour and a quarter.

Fig. 41.

Cylindrical Straw-Cutter

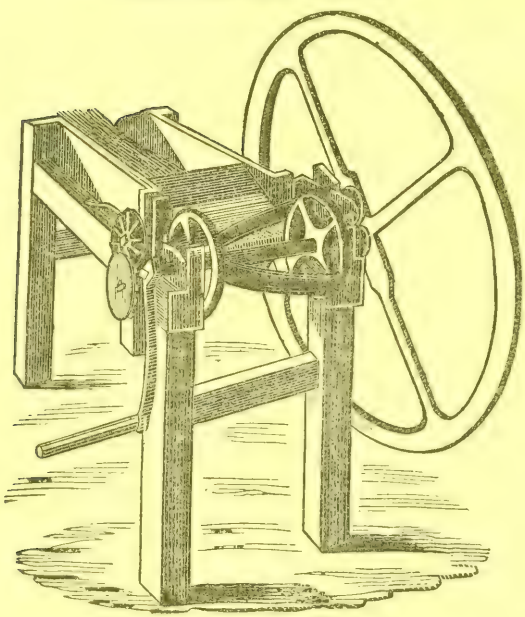
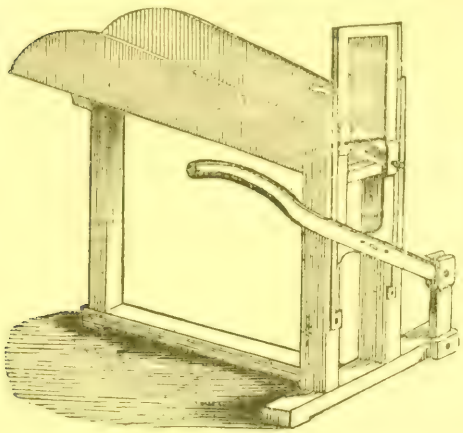


Fig. 42.

The knives in this machine are of spiral form, and act on a bed-steel in such a manner as to cut with great ease, without a very keen edge; many thousand bushels have been cut with them without sharpening the knives. They can be regulated to cut longer or shorter. This is one of the best machines in use for cutting hay and straw by hand. They are a heavy, strong machine, and are

much used at the South. There are four different sizes, having 9, 11, 14, and 20 inch knives. The larger sizes are rigged to be worked by power, and the smaller by hand.

COMMON HAND STRAW-CUTTER.



With these the straw is moved up by hand, and the knife is used by hand-lever. It is a very simple machine, and easily kept in order; though when more than one or two animals are fed, larger machines will be preferable

FIG. 43.

THE GREAT UTILITY OF HAY, STRAW, AND CORN-STALK CUTTERS.

There is great saving in the cutting of corn-stalks, hay, and straw, in two ways. The animals do not waste it by drawing it out of the mangers, and trampling it under their feet, and time and labor are saved them in masticating They obtain their supply of food readily, and then lie down to digest it Fermentation also developes the nutritive matter, and requires less work for the stomach, and this, by saving muscular exertion, leaves more strength with the animal to be expended on ordinary work. The same principle holds with milch cows, sheep, &c. If the food be given to them in a form more readily adapted to assimilation in the animal system, the greater the product of milk, wool, flesh, &c., they can yield from the same quantity. Cutting, bruising, grinding, fermenting, and cooking the food, all tend much to fit it for easy and rapid digestion, and whenever it can be thus prepared, without too much expenditure of labor, it should be done. By adopting a mixed food, much of the coarser products can be worked up, which are now suffered to be added to the manure heap. Indeed, scarcely any of the vegetable productions of the farm need be suffered to run to waste, till they have first contributed all the nutriment they contain to the support of animal life. By chopping these up fine, and properly cooking and seasoning them, they will be eaten with peculiar relish, easily digested, and go twice as far as in the ordinary method of feeding.

Both hay and straw should be slightly wet, and seasoned with a little meal and salt, for several hours before it is fed to the stock.

For cutting hay, straw, and stalks, those machines work with great ease and rapidity, having knives set to cut against a roller of raw hide as in fig. 41

The machine is a perfect self-feeder, without any extra and complicated fixture to perform that part of the work.

For this kind of cutters, crooked or spiral knives have been mostly used, which could not, without much difficulty, be properly sharpened or replaced except by the maker, subjecting purchasers to much inconvenience and expense. Some manufacturers confine the knives to the cylinder by means of flanges, sloats, and screws. Thus the knives are weakened, and the screws are liable to be lost or injured, and the flanges prevent the knives being placed upon the cylinder so near each other as to cut the straw as short as is by many thought to be necessary.

Important improvements have recently been made in the construction of this kind of machines, by using straight knives, confined by a simple cap, and placed in such a manner upon the cylinder that they perform the work in every respect as easily and expeditiously as the spiral knives. Thus improved, the machines possess several very important advantages.

The knives being straight, as in figure 41, are readily ground or sharpened by the purchaser; and they can be replaced by a common blacksmith when worn out or broken. The knives are made heavier and attached to the cylinder without sloats or screws, and are confined at both ends and supported in the middle in a manner much stronger and less complicated, thus leaving the strength of the knives unimpaired, and avoiding the great liability to twist, cripple, and break. The manner of attaching the knives to the cylinder admits of their being placed near each other, so as to cut as short as is desirable, and the hide-roller, when used with straight knives properly set, will last much longer than when used with the spiral knife.

Vegetable Cutter.

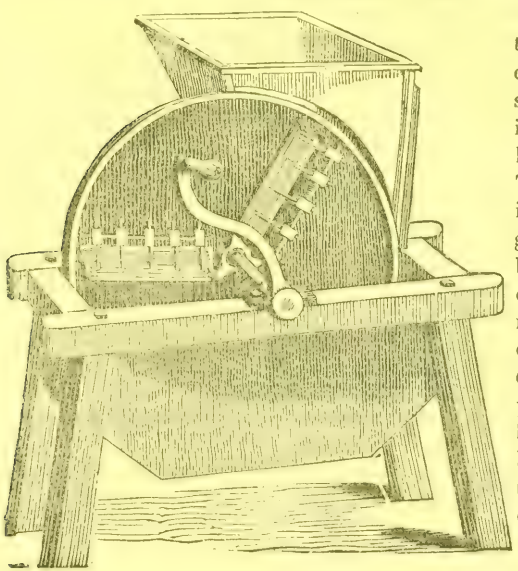
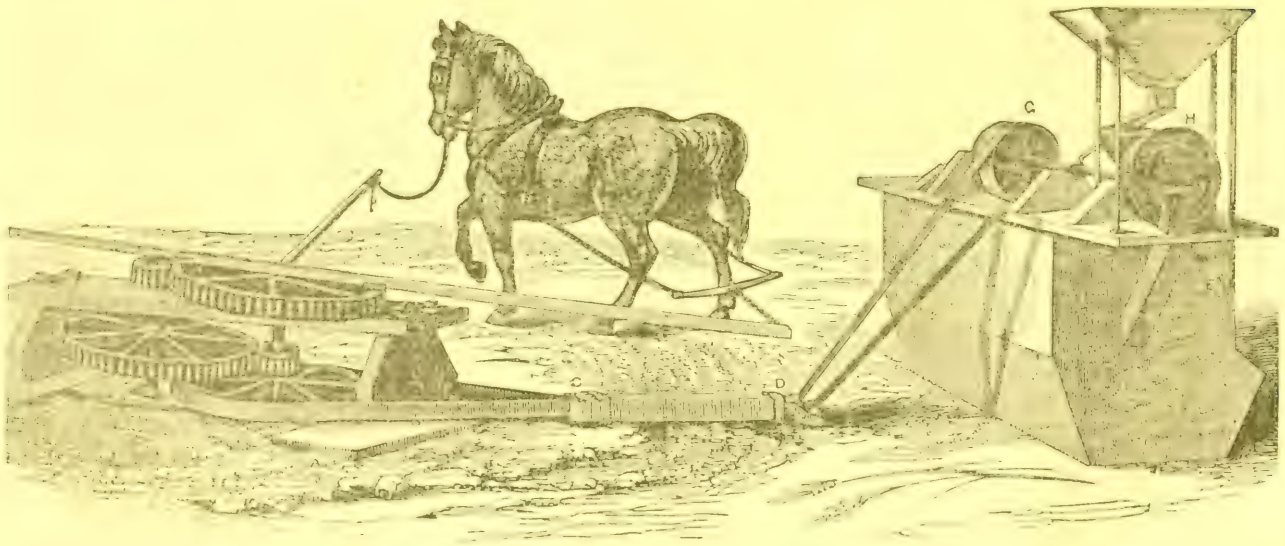


Fig. 44.

The cutting wheel of this implement is made of cast iron, faced on one side, through which is inserted three or more knives like plane-irons These cut the vegetables into thin slices with great rapidity, and then, by cross-knives, they are cut into slips of convenient form and size for cattle or sheep, without danger of choking. The pieces after cutting lie loosely, and can easily be taken up by the animal. The machine will cut 50 bushels per hour

FIG. 45.—HORSE-POWER.

Fig. 45 shows the construction of cast iron horse-powers so plainly as to render much description unnecessary. They are moved by one or more horses, attached to wooden arms inserted in sockets in the upper wheel. The belt is of leather, and bands the lower wheel, and then passes through a box (C D) with rollers, on to the wheel G, moving the mill H. The belt sometimes runs from an upright wheel set on to the horse-power in double gearing. The horse walks over the box (C D) in moving round. Fig. 45 may be packed up and carried easily in a two horse wagon from one place to another. Figs. 27 and 28 also illustrate the inclined plane or railroad horse-power. Another movable horse-power is shown in the annexed cut, fig. 46.



TAPLIN'S HORSE-POWER.

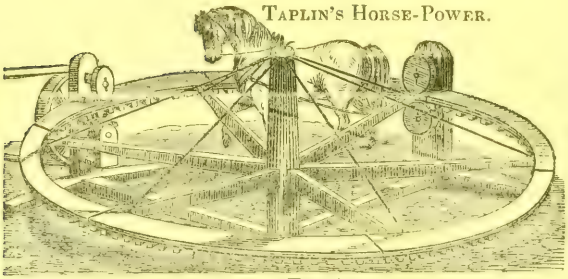


FIG. 46.

There is another kind of circular horse power, with a wooden rim, or a circle of about 20 feet diameter, to which iron segments are bolted They gear into a cog wheel which moves the machinery by a belt, or may be made to gear on to it by cast iron wheels. From one to six horses can travel round inside of this rim, and thus move the power. Many prefer this power to all others, although it requires more room. It is not complicated in its construction.

RAISING WATER BY HORSE-POWER.

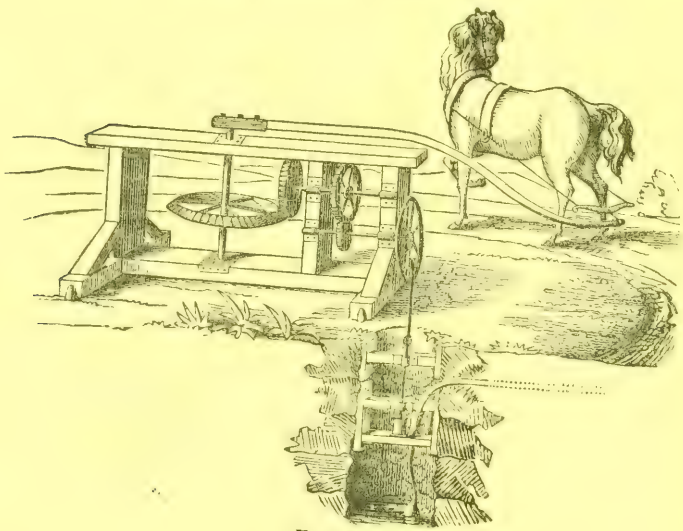


FIG. 47.

Machines to work pumps are generally made stationary, and on a more simple plan than such as are movable.

The circle for a horse to travel in, to work a power to advantage, ought to be twenty-five feet diameter, and a horse will pass round on an average about three times a minute. In order to get twenty-five revolutions to the crank, the large wheel must be eight times the diameter of the small one, or eight feet to one foot, if of cast-iron. But if made on the plan represented in cut (fig. 47), the large wheel may be made of wood with iron segments. In that case it would be well to make the large wheel twelve feet, and the pinions eighteen inches, as the friction is less when the wheels are larger.

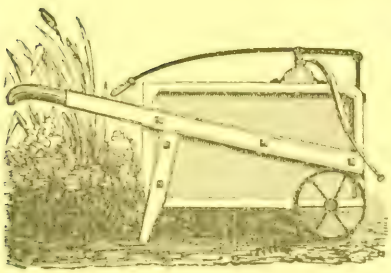
MISCELLANEOUS IMPLEMENTS AND MACHINES.

Cistern Hand-Pump.

This implement is made of cast-iron, and answers an excellent purpose for raising water from a cistern, or elsewhere, from a depth of twenty-five feet. It works well with a one and quarter inch lead-pipe.

Fig. 48.

Garden-Engine.



The box of this engine will hold 40 gallons. It is made with light wheels and handles, so that one person can wheel it. A double-action pump, two and a half inch cylinder, will throw water seventy feet horizontally, and forty feet high, with one person to work it. They are well calculated for watering gardens, washing windows, destroying worms on trees or shrubbery; extinguishing fire in buildings, &c. Water diluted with sulphur and thrown on plants, will destroy the worms on them

Fig. 49.

Syringes, and Hand Force-Pumps.

We have several sizes of these and the garden syringe, which are much used for various purposes in the garden

Cast-Iron Dirt Scrapers, or Ox-Shovels.

This kind is found to be far superior to anything for the purposes of road-making, levelling hills, filling hollows, digging wide deep ditches and cellars They are found very convenient on every farm and plantation.

Fig 50.

Ox-Yokes and Bows.

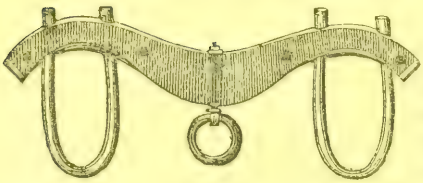


Fig. 51.

A good yoke is of great importance in securing the greatest amount of labor, with the utmost ease to the cattle. Such as are poorly made, or constructed on bad principles, are almost worthless; as they greatly diminish the labor, and often seriously injure the oxen. We have several kinds and sizes.

Cattle-Tie.

Fig. 52.

Fig. 52 is a chain for tying up cattle in their stalls The large ring goes over a stationary round post set up by the manger, and the chain is fastened to the horns. The hook at the end of the lower length of the chain is passed through either of the rings in the upper length, to suit the size at the base of the horns. It may be thought that this chain wears off the hair on the head of the animal, but this is not the fact. It is the neatest and most secure fastening in use, and at the same time the most comfortable; as the animal slips the chain up and down the stationary post, by the large ring, as it wishes to move its head in feeding or getting up and lying down; it can also turn and lick itself when thus fastened.

Bull-Rings.

Fig. 53.

A bull is easily rung, by punching the cartilage between the nostrils, and then inserting the ring and screwing it together. With a ring in his nose the most fractious animal is easily managed.

Balls.—These are brass or composition. They are screwed on the ends of the horns, and thus prevent animals from injuring each other.

Lactometer, or Cream-Gauge.

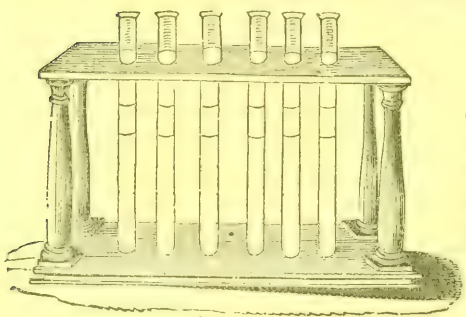


Fig. 54.

This instrument is used for determining the quantity of cream contained in milk. For description and mode of using see page 171, vol. v. American Agriculturist.

Cylindrical Churn.

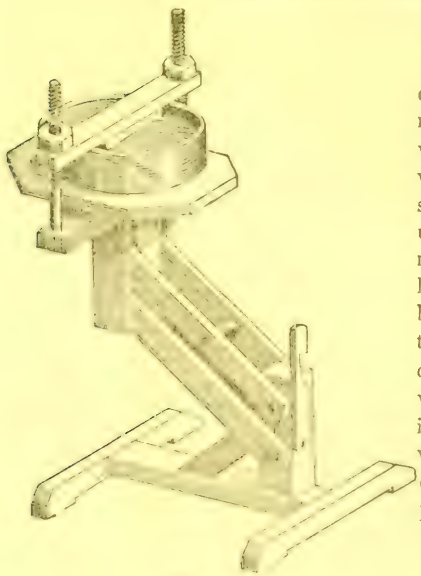
Fig. 55.

This is the best in use, as it is simple in its construction, and combines all the good qualities of other cylindrical churns, with this additional advantage, that the dasher can be taken out in a moment, when required to be cleansed. This is important after every churning, in order to keep it sweet and avoid taint to the cream.

Thermometer Churn.

The Cylinder Churn has recently been improved, by placing a thermometer in the side, which indicates the temperature of the cream within. To make the greatest quantity of butter in the least time, this should be at 55° Fahrenheit, at the commencement of the operation, and gradually rise to 63 or 65, at which it should stand when the operation is concluded. A double metallic bottom is constructed, in which warm or cold water, or even ice may be placed, so as to regulate the temperature. They are one of the most important of the dairy improvements of the day.

Self-Acting Cheese-Press.



For cheapness and simplicity of construction, strength, power, durability, and the perfect manner in which this implement does its work, we think it will eventually supersede every other cheese-press in use. It is so constructed, that by means of two pair of double-acting levers, the cheese presses itself by its own weight, and this in ten-fold proportion. Thus, if a cheese weighs twenty pounds, it will exert a constant pressure on itself of two hundred pounds; and whenever a greater pressure is required, for every pound added, a power of ten pounds is gained

SAUSAGE CUTTER (SHUT).

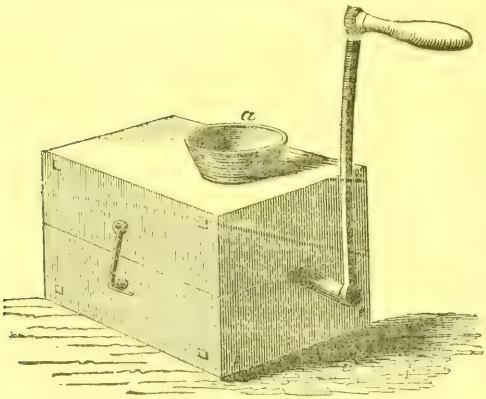


FIG. 57.

This implement consists of an oblong box, 13 inches in length by about 8 in. square, with a cavity 5¼ in. diameter through the centre, and closed at each end. A hole on the top of one extremity for a small hopper, receives the meat, while another in the bottom, at the opposite end, discharges it. A crank at one end turns a solid wooden cylinder in the centre, to which are attached two or more rows of spiral iron pins, that press the meat outwardly through a succession of sharp, steel knives, set within the box. It is made finer or coarser, according to the rapidity with which it is fed. One machine will cut from 1,000 to 1,500 lbs. per day. Price $5 for No. 1, and $10 for No. 2.

We have several sizes of other sausage cutters, with a vertical cutting knife following upon the meat, which revolves in a pan. Price $15 to $25.

SAUSAGE CUTTER (OPEN).

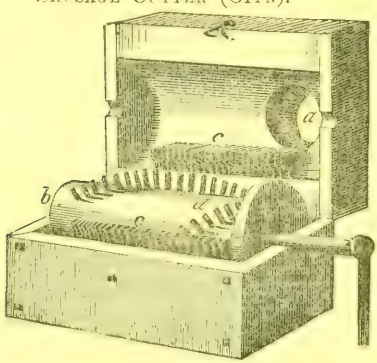


FIG. 58.

SAUSAGE STUFFER.

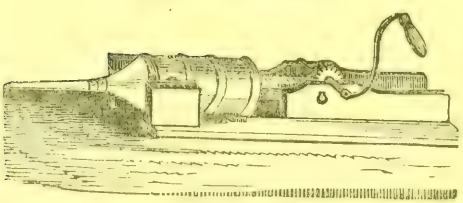


FIG. 59.

This machine will save the labor of eight or ten persons, and the work is done with great ease.

GLASS MILK-PANS.

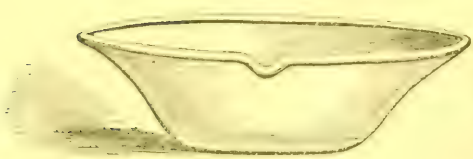


FIG. 59½.

These can be furnished on order, with or without covers, to hold from four to twelve quarts each. They are more easily kept sweet and clean than if made of metal, wood, or stone, and are not liable to sour the milk by the electric changes in the atmosphere.

PATENT BEE HIVES.

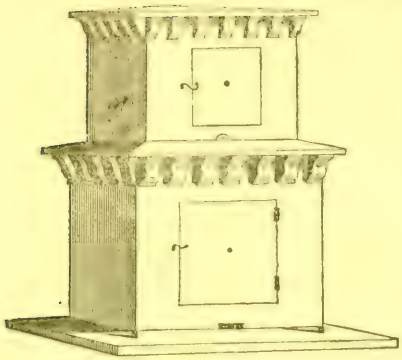


FIG. 60.

Of these, we have a great variety of patterns, and of the latest and best improvements. They are so made that it is not necessary to destroy the bees to procure the honey. The lower apartment is appropriated to storing the bee bread and rearing the young, while the pure, fresh comb is taken from the top, as often as necessary, without disturbing the operations of the bees.

BUSH OR ROOT-PULLER.

FIG. 61.

This is a very useful implement to attach to bushes, clumps of roots, and bogs, for the purpose of pulling them out of the ground. It is made with two, three, or four claws. These are hooked to the bush close to the ground; the cattle are then attached to it by a chain, when the bush and roots are easily hauled out. It will do the work of half a dozen men in clearing and grubbing.

BRUSH AND BRAMBLE-HOOK.

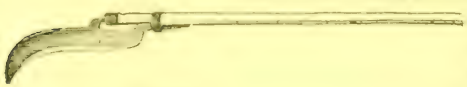
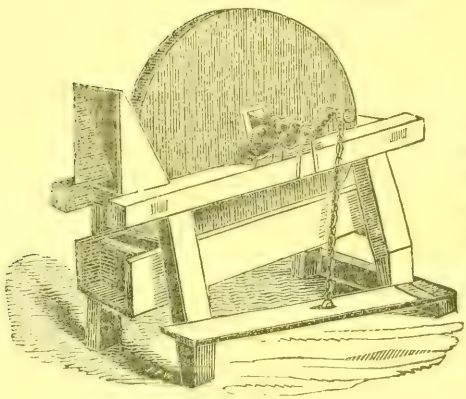


FIG 62.

A strong and useful implement for cutting brush or briers about fences, or in clearing or underbrushing groves or forests.

GRINDSTONE.

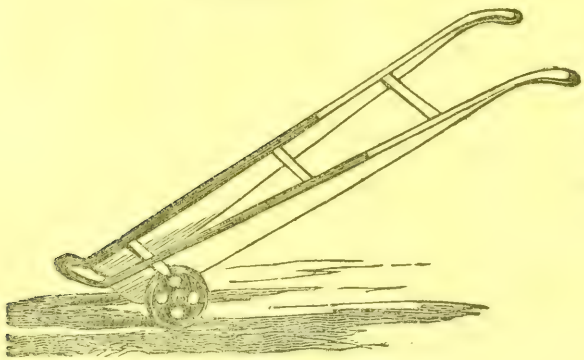


These are now generally hung on friction rollers, and are moved with a treadle. The person grinding can thus turn his own stone without assistance.

The friction rollers render the movement of the stone very easy.

FIG. 63.

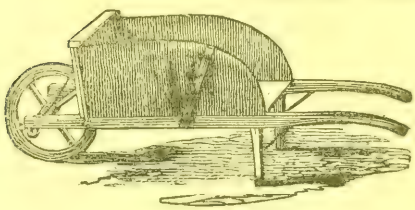
HAND-TRUCK.



For trucking by hand, boxes, bales, &c., in the store. They are of various sizes.

FIG. 64.

WHEEL AND CANAL BARROW.



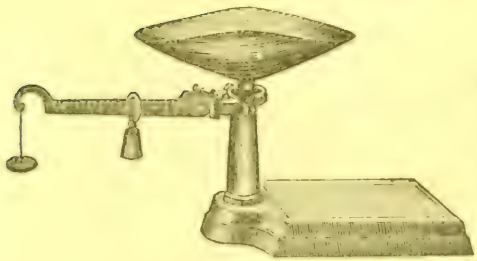
Of these we have several kinds

FIG. 65.

STEAM-ENGINES AND BOILERS.

These can be supplied, on order, of the best finish, and warranted; and at prices as low as they can be found in any part of the United States.

CENTRE-SCALES.



These are made with the same accuracy as the platform scales, but much lighter to weigh smaller quantities. All of the foregoing can be furnished both at wholesale and retail.

FIG. 65*

IMPROVED EAGLE COTTON-GIN.

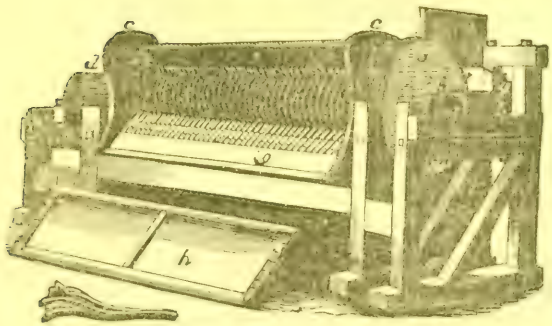
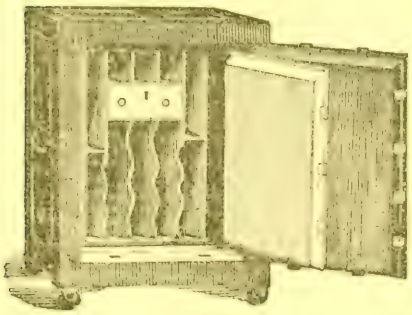


FIG. 66.

Description.—*a*, driving brush pulley; *b*, slide; *c*, *c*, end boards; *d*, cylinder pulley; *e*, top board; *f*, saws; *g*, grate fall; *h*, seed board, with a section of the patent grate below it; *i*, idler pulley. The above machines will be supplied on orders.

FIRE-PROOF IRON CHEST.



These can be furnished of all sizes. They afford safety for valuable papers, money, plate, jewelry, &c., not only against fire, but, when properly constructed, they are proof against any ordinary attempts at robbery.

FIG. 67.

MOWING MACHINE

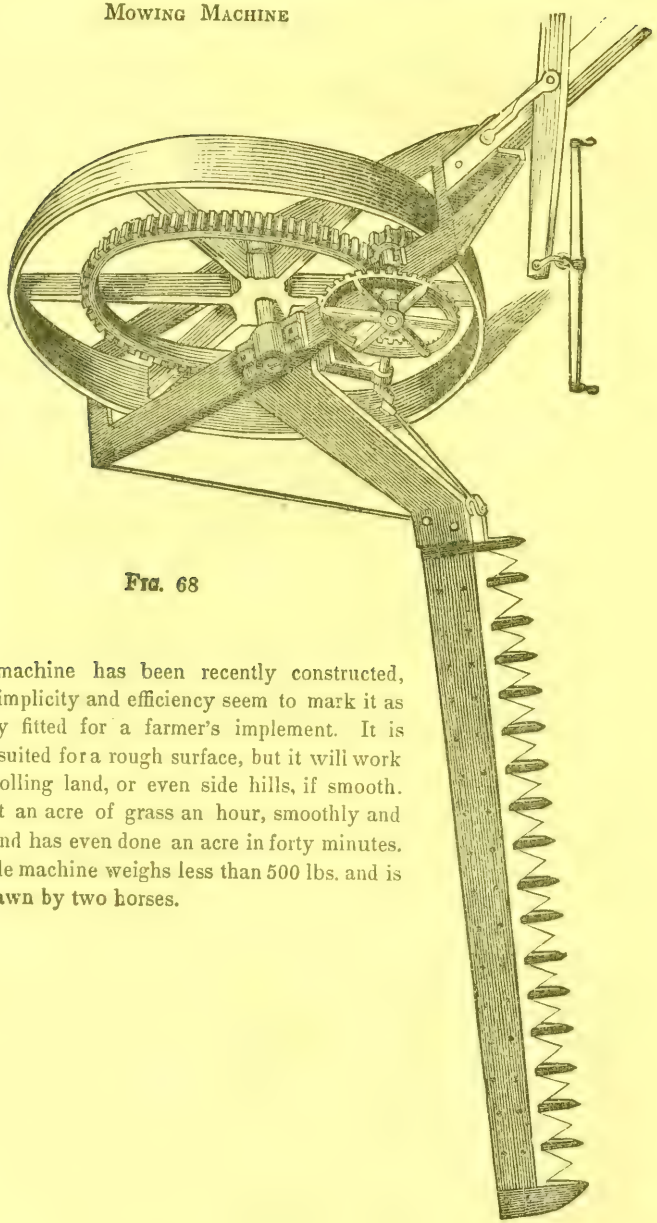


FIG. 68

This machine has been recently constructed, and its simplicity and efficiency seem to mark it as peculiarly fitted for a farmer's implement. It is not well suited for a rough surface, but it will work well on rolling land, or even side hills, if smooth. It will cut an acre of grass an hour, smoothly and evenly, and has even done an acre in forty minutes. The whole machine weighs less than 500 lbs. and is easily drawn by two horses.

Brick-Machine.

These can be furnished on order, of different patterns. They are worked by hand, and will turn out, of a good and uniform quality, as many bricks as can be made by two or three good moulders in the ordinary mode. Some of these machines make a very superior quality of pressed brick, which command the highest price in market. When several occupy the same yard, a steam-engine may be used for mixing the clay in the place of the ordinary horse power, which will greatly facilitate the operation and lessen the expense.

Fig. 69

Sugar-Crushers.

We have these of three different sizes. They will crush from 4 to 10 hogsheads a day.

HORTICULTURAL IMPLEMENTS.

Horticultural Tool-Chest.

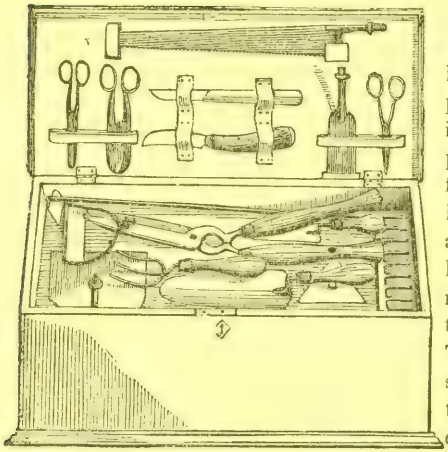


Fig. 70.

The convenience of having at hand the requisite tools or implements for gardening and pruning purposes, to be kept in a place where they can always be found, is obvious to every one. If suffered to lie, or be scattered about the premises, they are liable to be mislaid or lost, and more time is spent in looking them up than they are worth. This is obviated by using a small tool-chest purposely adapted to keep them. It is very complete, containing quite a variety of implements, only part of which are shown in the cut

Anderson's Patent Hammer.

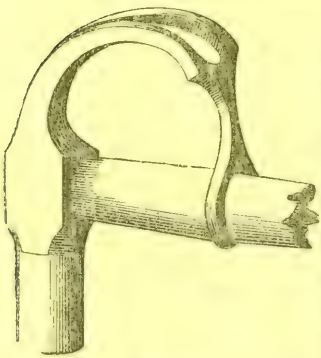


Fig. 71.

This is a recent invention ; the claw, as will be seen by the cut, extending to the handle and clasping it with a strong ring, which makes it impossible, in drawing nails, for the handle to give way, draw out or become loose. The face of the patent hammer will thus always remain true, it being kept at the same angle with the handle. These hammers are made of cast steel of the best kind, and in a very superior manner. Six different sizes are now made, weighing from half a pound to one and a half pounds.

Fruit Gatherers.

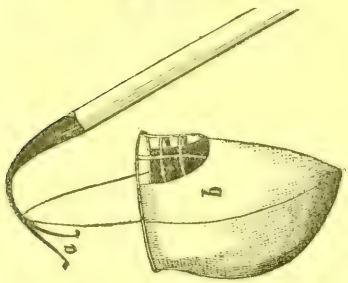


Fig. 72.

These are very useful in gathering fruit from high branches. This is done by placing the implement on a light pole of any length required, and slightly jerking or pulling the fruit into the bag suspended from the fork which detaches the stem

HOES, SPADES, PICKS, SHOVELS, &c.

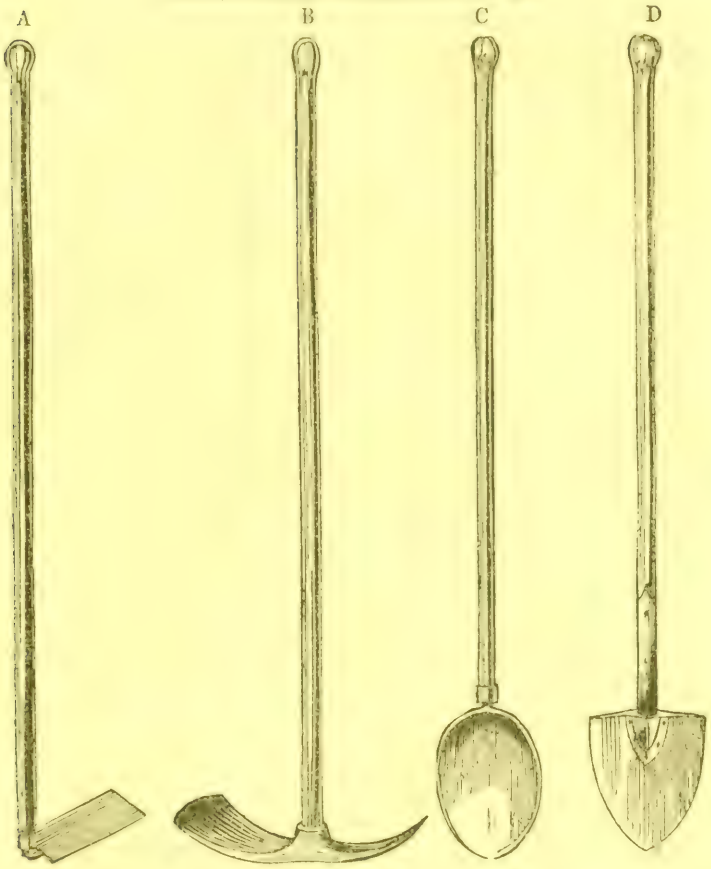


Fig. 74.

A, Bog and heavy field hoe.
B, Bog-hoe and Pick attached.
C, Post-spoon for digging post holes.
D, Round-pointed shovel.
Common hoes of all kinds.

Besides the ordinary kinds of hoes, we have different sizes of the choicest kinds made expressly for the cultivation of sugar, cotton, &c.

Fig. 75.

Dutch or Shuffle-Hoe.

From three to twelve inches wide, used for weeding and stirring the earth.

Shovels and Spades.

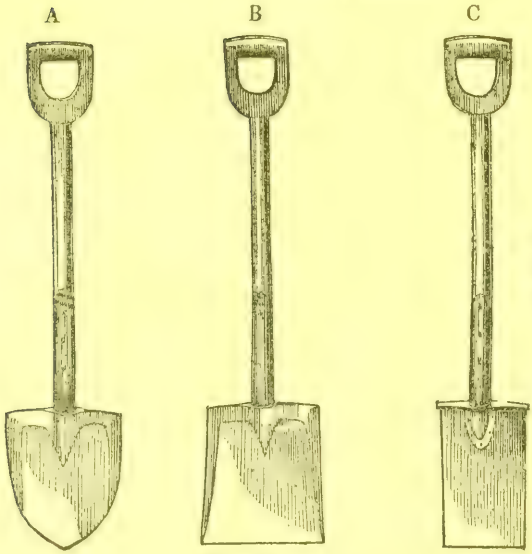


Fig. 76.

Of these we have Ames', and a great variety from the best manufacturers.

Pitchforks.

Pitchforks of different sizes, very strong and elastic. They are made by several manufacturers, with two, three, and four tines each.

Manure Forks.

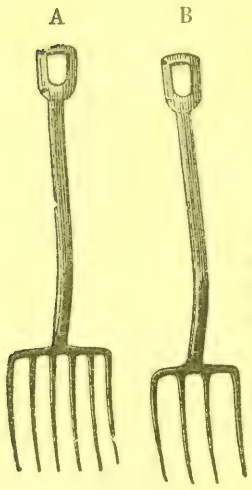


Fig. 77

Floral Rake.

Fig. 77½.

The best forks are cut out of a plate of cast steel, and have from four to eight tines each. They have all the elasticity of a steel ramrod. They are strong, and very durable if properly handled. We also keep a large assortment of the common kind of manure forks.

Garden Fork.

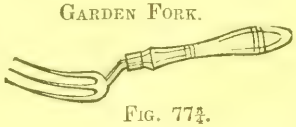


Fig. 77¾.

SCUFFLER, TROWEL, AND HOE.

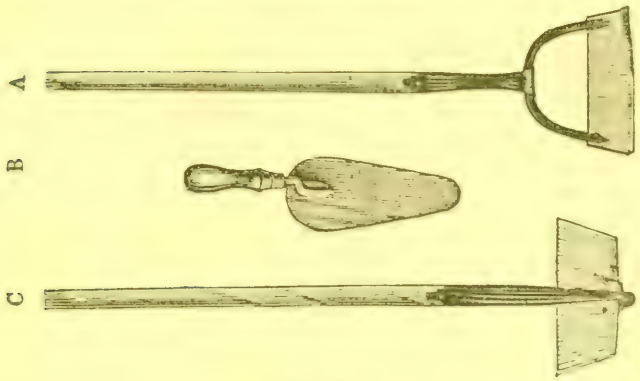


FIG. 78.

A, Garden-scuffler.

B, Transplanting-trowel, very useful for transplanting flowers and plants.

C, Weeding-hoe.

PRUNING-SAW AND CHISEL.

FIG. 79.

The blade of the saw is about 12 inches long, attached to the blade of the chisel at one end and to the socket of the chisel handle at the other end. The chisel is 3 inches wide by 4 inches long, made thin, and of the best cast steel. A wooden handle of convenient length is inserted in the socket handle, enabling a person to stand on the ground and trim his trees.

TREE-SCRAPER.

FIG. 79½.

LOPPING OR BRANCH-SHEARS.

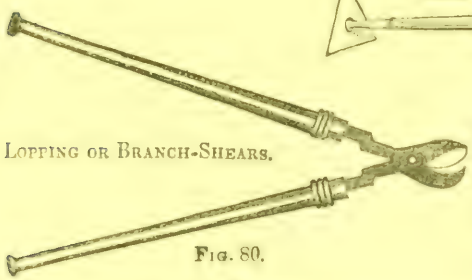


FIG. 80.

Figure 80, is very strongly made, with long wooden handles, and is used for cutting thick branches from trees, shrubbery, hedges, &c.

PRUNING-SCISSORS WITH BOWS.

FIG. 81.

Fig. 81, is adapted to pruning small twigs, cutting flowers, &c., and is a very useful article for ladies.

Sliding Pruning-Shears.

These instruments have wooden handles, and differ from the Lopping or Branch shears, in having a movable centre for the motion of one of the blades, by which means, instead of a crushing cut, they make a draw cut, leaving the section of the part attached to the tree or shrub smooth, as if cut off with a knife; they are also much lighter and better finished than the Lopping shears.

Fig. 82.

Garden or Hedge-Shears.

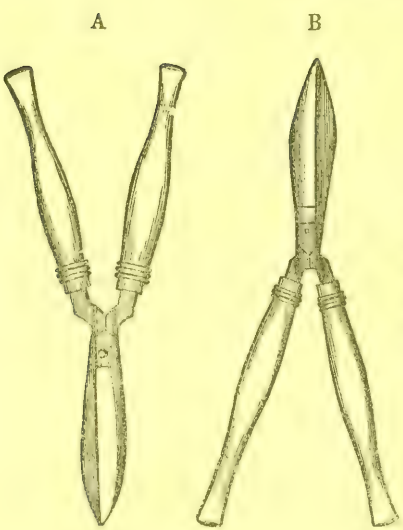


Fig 83, A, represents this article without the pruning notch; B has the pruning notch, which is of advantage, when used for trimming hedges or shrubbery, as it enables the operator to cut much stronger twigs than could otherwise be cut by the shears.

Fig. 83.

GRASS-EDGING OR BORDER-SHEARS.

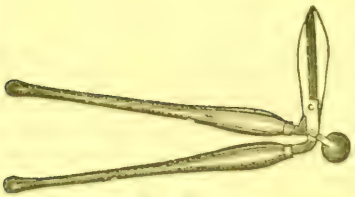


FIG. 84

Fig. 84 is chiefly used for trimming the sides of box and grass edgings, and is constructed so that the operator may stand upright whilst using it, the one figured here has a wheel attached, which is generally considered an advantage

LADIES' GARDEN-SHEARS

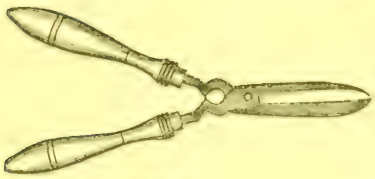


FIG 85

Fig. 85 is small, light, and neatly finished, and is very useful for trimming box trees and bushes, as well as for many other purposes.

LADIES' PRUNING-SHEARS.

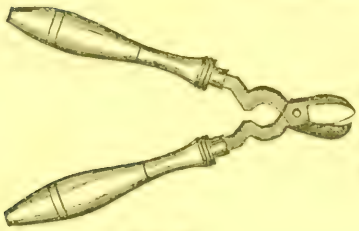


FIG. 86.

Fig. 86, with wood handles, are handsomely and lightly made ; they are very useful in trimming shrubbery, &c., which is too large to be cut by the hand-shears.

POLE PRUNING-SHEARS.

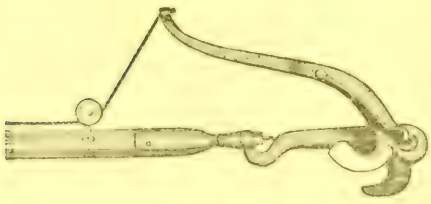


FIG. 87.

Fig 87 is attached to a pole, and operates by means of a lever moved by a cord and pulley. Its use is to enable a person, standing on the ground, to prune trees, some of the branches of which could not, perhaps, be as well pruned by any other implement. Branches of one inch and a half in diameter may be easily cut off with this instrument. Shears of this kind, of small size, are also very useful in cutting off from shade and fruit trees, small branches to which insects have attached themselves ; they are also used for gathering fine fruits, which, when cut, will fall into a basket attached to the instrument when used for this purpose.

Pole Pruning-Nippers.

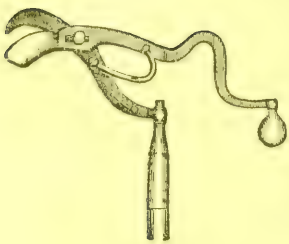


Fig. 88.

Fig. 88 is a very efficient instrument, and possesses the advantage of having a sliding cut, which lessens the labor of the person pruning, and leaves the branch which has been cut as smooth as if a knife had been used; this instrument is much superior to the pole pruning-shears, but will not cut a branch of greater diameter than one inch.

Pruning-Scissors.

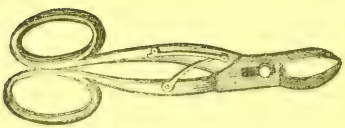


Fig. 89.

Fig. 89 is very handsomely made, with sliding centre and spring, and is fitted with sheaths; these scissors cut as smoothly as a pruning knife, and for pruning rose bushes, &c., are superior, especially for ladies.

Vine-Scissors.

Fig. 90.

Fig. 90 is used for thinning out grapes, when they have grown too closely on the bunch; also for removing superfluous leaves, twigs, &c.

Flower-Gatherer.

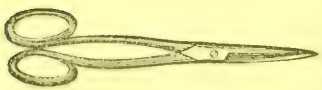


Fig. 91.

Fig. 91 is a pair of scissors combining tweezers or pincers; they are of great advantage in gathering roses and other flowers which have thorny stems, as the flower cut by the scissors is held fast by that part which acts as pincers.

Hand-Sliding Pruning-Shears.

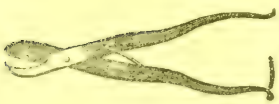


Fig. 92.

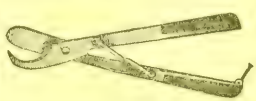


Fig. 93

Figs. 92 and 93 represent the iron handled shears, and, for gentlemen's use, are the best instruments for pruning roses, &c.; they have the sliding centre and spring, and make a perfectly smooth cut.

The Grass-Edging Knife.

Fig. 94.

Fig. 94 is fitted to a straight handle, and used for paring the edges of grass bordering walks, &c.; also for cutting the out lines of sods, which may then be readily raised by the spade.

Brier or Bill-Hooks.

Fig. 95.

These are of various forms, though the one represented here is the kind most approved; they are used with either long or short handles, as circumstances may require, and are very useful for trimming hedges, cutting brush, brambles, &c.

Garden-Rakes.

Fig. 96.

These vary in the length and strength of their teeth, as well as in their number; they are used for covering seed, raking of weeds or cut grass, smoothing and pulverizing surfaces, &c.

The Grass Lawn Rake.

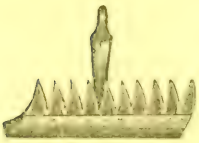


Fig. 97.

Fig 97 has teeth sharpened on both edges like lancets, and is used for raking the grass in order to tear off the flower heads or buds of daisies, dandelions, and other plants in grass lawns.

Garden-Trowels.

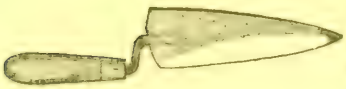


Fig. 98.

Fig. 98 is used to plant or take up for re-planting, herbaceous plants, very smal trees, roots, &c.; they are also used for stirring the soil among tender plants in confined situations and loosening the roots.

Garden-Hoes.

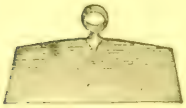


Fig. 99.

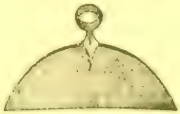


Fig. 100.

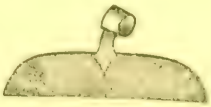


Fig. 101.

Fig. 102.

Fig. 103.

Fig. 104.

Fig. 99, Square Hoe, cast steel; Fig. 100, Half-round Hoe, cast steel; Fig. 101, Turnip Hoe, cast steel; Fig. 102, Triangle Hoe, cast steel; Fig. 103, Forked-back Hoe, cast steel; Fig. 104, Pronged-back Hoe, cast steel.

Sugar-Crushers.

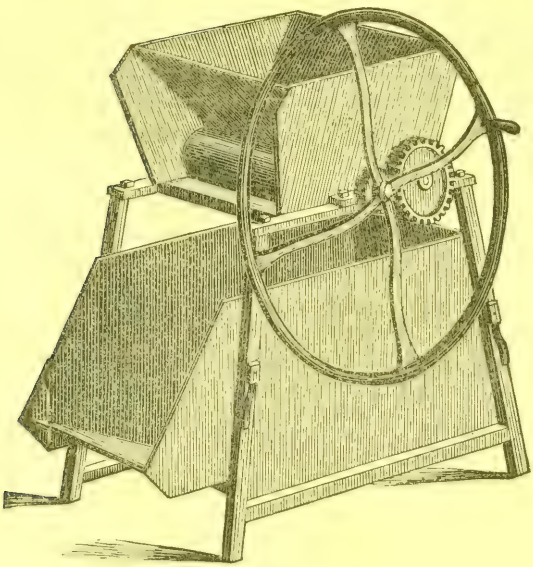


Fig. 105.

This machine is used by grocers and others, for crushing sugar as it is taken from the hogshead, preparatory to offering it for sale. The dampness of the bottom or sides of the cask is thus equalized, and the appearance of the sugar thereby much improved. They are simple and easily kept in order, and are turned by hand. They are of various sizes, and will crush from 6 to 12 hogsheads, or more, per day.

Platform-Scales.

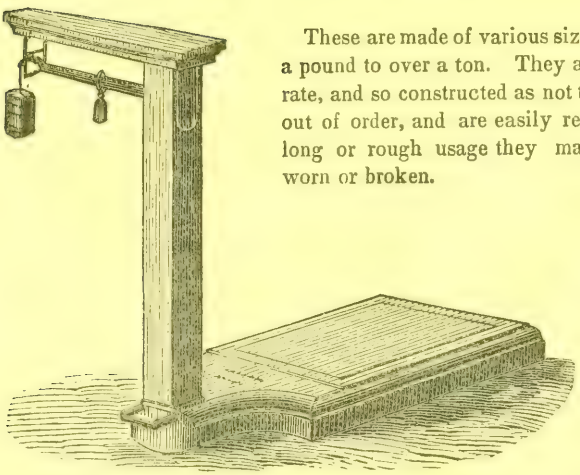


Fig. 106.

These are made of various sizes, to weigh from a pound to over a ton. They are entirely accurate, and so constructed as not to be liable to get out of order, and are easily repaired when by long or rough usage they may have become worn or broken.

WATER-RAM, OR SELF-ACTING ELEVATOR.

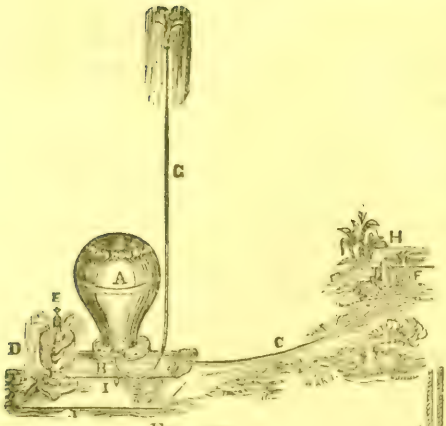


FIG. 107.

Explanation. — H is the brook, spring, or fountain; C, the supply, or drive pipe; G, the pipe which conveys a part of the water from the drive pipe to the place where wanted; A, the air chamber of the ram; E, top of brass valve; D, water wasting through the valve by which the power of the ram is secured.

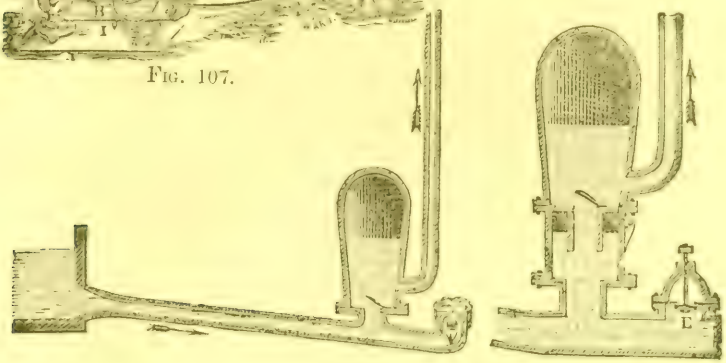


FIG. 108.

Wherever a large spring, or a limited but constant stream is at hand, by which a fall of four or five feet may be produced, by building a dam or otherwise, a considerable portion of the water of such a stream may be raised to a perpendicular height of more than 100 feet, by its own power. Thus a stream in a deep valley, or a river or brook, situated some distance below a point where it is desired to have a cistern or reservoir, may be made to raise itself by one of these machines. From such a cistern or reservoir, the water may be conveyed to any part of the premises of a lower yard and applied to the purposes of irrigation, the watering of stock, the supply of manufactures, or for domestic or ornamental use. By this means, lawns may be kept fresh and green through the driest weather; fields and gardens may be irrigated, fountains be kept playing, and public buildings, hospitals, hotels, private dwellings, and manufactories, may be copiously supplied with water in their highest apartments.

We furnish these machines to order, of various sizes, and at a moderate cost. They will raise from 5 to 50 gallons per minute.

Orders received, also, for any of the following articles, with competent engineer, if required, for fitting them up, viz. Cast-Iron Fountains, Figures and Shells, Fire-Engines, Double-acting Force-Pumps, Filtering-Machines, Air-Pumps, Wind-Mills, Water-Wheels, Leather-Hose and Hose Coupling-Screws. Lead-Pipe, Brass-Work, &c.

CAST-IRON FOUNTAIN.

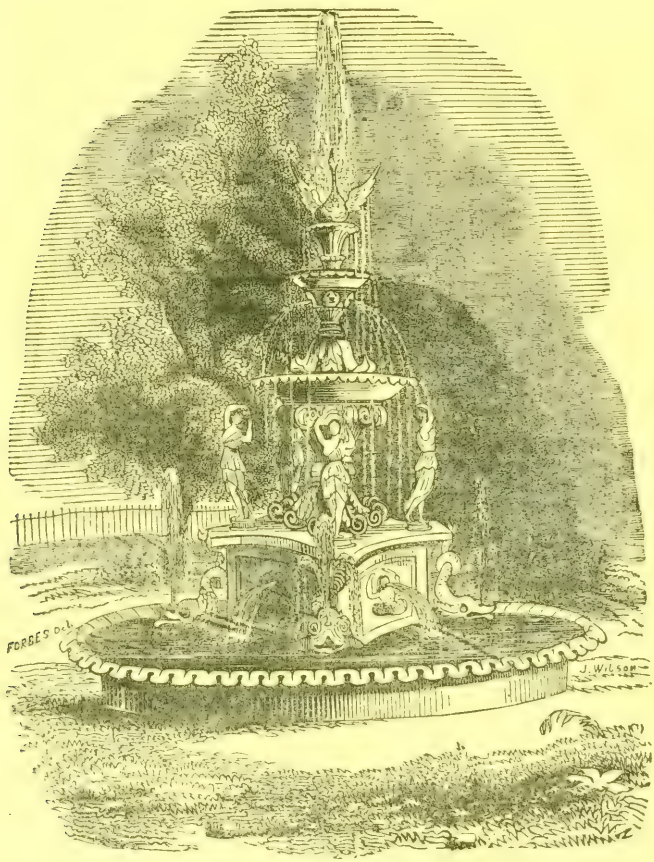
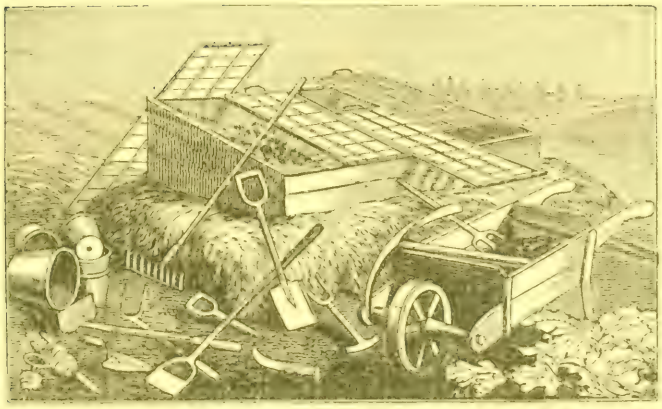


FIG. 109.

There are a great variety of the cast-iron fountains furnished us by the manufacturers, combining almost every style of rural and classic taste, all of which we can supply on demand, at the lowest prices.

THE GARDEN.



In garden culture, greater pains should be taken than in field culture, because the products there are required to be of superior quality, and it is desired to make the most of the land, to say nothing about the eye being gratified with its tidy appearance. It should be sheltered from cold winds, and have a southern or eastern aspect if possible; also, a warm, dry soil for all early vegetables. Later products may be put on a colder soil. The deeper the ground is stirred, and enriched, the better. One foot is the least depth that a good gardener will be satisfied with, and if he can turn up and enrich the soil to eighteen inches or two feet, so much the better. Indeed, with asparagus and some other products, the latter depth is absolutely necessary to produce a good crop.

Soils.

Stiff clays should generally be kept in grass or the small grains, for, owing to their adhesiveness, they are so difficult of cultivation that they will not pay for working them at the present prices of labor. If properly managed and occasionally manured, their average yield of grass is good, and it does not run out as in most other soils. Loamy and sandy soils should be subject to a rotation of crops.

The ground should always be thoroughly and deeply pulverized. In addition to the use of the best common plows, this is best done with the sub soil plow, which loosens the substratum without turning it up to the surface.

Sub-soils are rarely so rich as surface soils; they should therefore be brought up and mixed with the surface soil no faster than they can be enriched and made equal to it. A rich subsoil may be advantageously turned up to any depth. In alluvial bottoms, when a depth of six inches or more of soil has been cultivated till it has become somewhat exhausted, by turning up an additional depth of fresh rich earth is thus brought to the cultivated surface, and is equivalent to a good manuring. Trench or deep plowing, under such circumstances, is very beneficial.

FIELD AND GARDEN SEEDS,

OBSERVATIONS RELATIVE TO SELECTION, CULTURE, &c.

In selecting our seeds we use the utmost care to ascertain, in the first place, whether they be true of their kind; and secondly, whether they are fresh and certain to generate; and thirdly, whether they be free from all foul seed. We, however, do not claim infallibility, and from being deceived ourselves, may occasionally be the innocent means of deceiving others. Whenever such a case occurs we beg to be apprised of it, and the party complaining shall be ensured redress.

Seeds often do not germinate in consequence of the extreme dryness or dampness of the ground; from excessive heat or cold; from being covered too deep or too shallow; sometimes they are burned up by coming in too close contact with hot manures; or the soil may be too poor; or they may be eaten up by under-ground insects; or if they escape these, as soon as the embryo bursts and before it can appear above ground, it may be destroyed by worms or flies frequently so minute that the naked eye cannot perceive them; or after coming up, they may be choked and destroyed by weeds. All these causes should be inquired into thoroughly before complaint is made; for it is more often other causes than fault of the seed, that prevent its germination and growth. Where there is any doubt upon the subject, a small quantity of seed should be sown in a flower-pot, and carefully guarded in a conservatory or some proper place, till a sufficient time has elapsed to prove whether it be good or bad.

CULTURE OF ROOTS.—All roots require a deep, rich, mellow, and sufficiently dry soil It should be worked at a time that will insure its being left finely pulverized. The use of long or unfermented manure is not objectionable, if it can be laid sufficiently deep in the furrow to be out of the way of subsequent tillage. The great supply of the nutritious gases afforded to the growing crop while it is undergoing decomposition, renders it a valuable manure.

ARTICHOKE (*for the Garden*).—The Large Globe is the best variety. It is propagated either from the seeds or roots. It requires a rich soil and ample room. Plant the seed early in the spring, three or four inches apart, in rows from one to one and a half feet apart. The next year, transplant the roots or offsets to beds highly manured, placing three or four roots in a circle of six inches, and these circles three or four feet apart. Protect during the winter by raising over them a mound or litter of light dry earth.

ARTICHOKE, JERUSALEM (*for the field*).—This root is cultivated like the potato, in hills or drills. At the South and West, it is fed by turning swine on to the fields. A winter's supply of food for these animals is easily provided, and the crop thus fed off greatly enriches the land. This artichoke is considered one of the best of fertilizers, as it derives a large amount of its carbon and nitrogen from the atmosphere. It should be cultivated extensively in well grown orchards. After the fruit is gathered, swine may be turned on. Their rooting is nearly as beneficial as plowing; they destroy, at the same time, nearly all the insects harboring round the trees, and the manure they leave is equivalent to a good top-dressing. Frost does not injure artichokes and they will propagate without replanting. They grow on the poorest land.

ASPARAGUS.—There are several varieties of asparagus, but the difference mainly arises from the nature of the soil. On strong loamy land, the growth is more robust and the shoots more tender than on sandy soil. Early in the spring, soak the seed in warm water for 24 hours, then drill it thinly, in rows sufficiently wide to admit the hoe. When two years old, they may be transplanted into permanent beds. A convenient width for these is four feet, and the plants placed twelve inches apart in each direction. They should be planted at least four inches beneath the surface, well manured at the time, and annually thereafter. Salt, spread broadcast thickly over the beds, after forking them over early in the spring, adds to the growth of the plant, and makes it much sweeter and more delicate. A compost of guano and charcoal is also an excellent top-dressing,

BEANS.—These may be planted in hills or drills. The former is somewhat more convenient for the field, as it admits of easier culture with light plows or cultivators. When land is in good condition, it is better to place the hills so near to each other, that only a first or second plowing can be performed. The spreading of the vines will prevent any subsequent cultivation. Hoeing when wet with rain or dew is said to rust them. The best bearers are the garden beans; and among these there are none better than the long white kidney. They are early ripe, sure and prolific bearers. Any good soil is suited to them, but it must be dry. They may be planted when there is no longer danger from frost. They are often planted among corn at the second hoeing, but the corn ought to be sufficiently thick to prevent the growth of any other crop.

BEET.—Pour boiling water on the seed, and let it stand afterwards at blood heat for two or three days at least, when it will be fit for sowing. Mix plaster, ashes, or fine dirt, with the seed before sowing, then plant with a seed sower, or sow by hand, four inches apart, in drills two and a half or three feet distance, and about one inch deep, and set the earth compactly over them. After the young plants make their appearance, stir the earth frequently with the horse plow or cultivator, and keep the weeds well cleaned out. But one plant should be left every six to eight inches in the drills, and if any are deficient, their places may be supplied by transplanting in a moist or wet day. They should be harvested before severe frosts set in, the tops trimmed off and

laid in pits or in a cool cellar. The best kind for stock feeding, is the sugar beet, and it produces as large a crop as the mangel-wurzel. The long blood red, and orange turnip-root beets, are the best for the garden. These may be sown in drills one foot apart. Four pounds of good seed is enough for an acre.

Borecole.—Under this head, we may have the dwarf-kale, which is an excellent green for winter and spring use, and being dwarf it is easily preserved during the severest weather; and the Scotch kale, which is sown in May and transplanted and treated as winter cabbage.

Broccoli.—This produces heads like cauliflower in autumn. The large purple Cape appears to be the best adapted to our climate. Sow in seed-beds early, transplant into very rich ground when eight or twelve inches high, and manage generally as is usual with winter cabbage.

Brussels Sprouts—Are cultivated for the small heads which spring in considerable numbers from the main stem. They are much esteemed in some parts of Europe. Sow in seed-bed early in spring, and transplant and manage as with winter cabbage.

Cabbage.—For the garden, sow the early sorts in a hot-bed, and transplant from two to three feet apart in a wet or cloudy day, as soon as the weather will permit, on well manured or rich land. For field-culture, sow the later and larger kinds of seed in beds, and transplant about the first of June, somewhat farther apart than in the garden, so as to admit the cultivator running between the rows.

Carrots.—These should be sown in soil similar to the beet, except that it requires to be somewhat lighter and looser than is essential to the beet. Soak the seed in warm water for a day or two, and then thoroughly mix it with plaster, ashes, or dirt, to break the little adhesive fibres, and allow of sowing easily. The drills may be two to two and a half feet apart, and the plants allowed to stand about eight inches apart in the drill, if of the largest kinds or if of the smaller, they may stand nearer. For the garden, sow in rows of one foot apart. Frequent hoeing or stirring the ground, and thorough weeding, are essential subsequently. The white or Belgian carrot is the greatest producer at the least expense of soil, as it draws largely from the atmosphere for its support, and growing high out of the ground, it is easily harvested. It is not, however, as nutritious for stock, pound for pound, as the other kinds. The long orange or red is a choice kind for the field. About two pounds of seed is required per acre.

Cauliflower.—Sow the early in hot-beds, and transplant into rich soil. The late to be treated like the Cape broccoli, which it resembles.

Celery.—Sow in hot-beds, and transplant into a rich, moist place. This is a favorite salad.

Chervil.—This is also used as a salad. Sow in close drills in May.

Corn-Salad or Vettikost.—This is a small salad used throughout the wi-

ter and spring. Sow thickly in drills first of autumn, and cover lightly with straw on the first approach of severe weather.

Indian Corn.—This should be planted for ripening as soon as the spring frosts are over. The soil must be light, dry, and rich, to produce a good crop It is always best to soak the seed before planting, in a strong solution of saltpetre. This gives an early, vigorous growth, and prevents crows and other foragers from depredating on the fields. An absurd principle is adopted by some farmers, to set up scare-crows, or kill off the birds visiting the fields. Even if they take some of the seed, they will probably more than make up for it, by the quantity of worms and bugs they will also destroy. But by soaking in saltpetre, or pouring into a barrel containing a bushel of seed, a quart or more of very hot tar, stirring the whole mass rapidly, every kernel will have become coated, and the plunderers after picking up a few will gladly give up the pillage, and betake themselves to an extermination of the rival enemies to the corn, the worms, bugs, and beetles.

Corn should be planted on well plowed ground in leaving, with three to six stalks in a hill, according to the kind of seed used, three to five feet apart, so as to admit of weeding and stirring the earth both ways with the plow or cultivator. For light land, even or level cultivation (not hilling) is best. The tops of the corn should never be cut off till the corn is nearly ripened; but instead of the top, when there is danger from frost, the whole stalk should be cut close to the ground as soon as the grain is thoroughly glazed. If shocked in the field in this state it will fully mature the grain and yield good fodder from the stalk. The Dutton, Brown, and other kinds of eight-rowed, large-eared, and early-maturing corn, are best for the Northern States; while the choicest varieties of the gourd seed are better and more productive for the warmer climate of the South and West. Sugar or sweet corn is the favorite for cultivating in the garden for table use.

Sowing corn for soiling or fodder has been adopted of late years This is done by sowing in drills, say eighteen inches or two feet apart, and quite thick in the rows; or broadcast, at the rate of three to four and a half bushels per acre. The best kind for soiling is the sweet corn, as its stalks are the sweetest, most juicy, and tender. Where it has taken well, and the season has proved favorable, an enormous quantity of fodder has thus been raised.

Broom-Corn—Should be planted on soil similar to the preceding, but somewhat later in the season, as a spring frost, which could be resisted by the greater hardiness of Indian corn, might effectually destroy this plant. The rows should be three feet apart, and the hills about two feet distant from each other; fifteen to twenty ripe seeds should be sown in a hill, so as to ensure eight or ten good plants, to which number they should be thinned on a second weeding. Early and frequent stirring of the ground is essential.

Curled Cress or Pepper-Grass.—Used as a small salad. Sow very thickly in shallow drills, at short intervals throughout the season.

Cucumbers.—To obtain them early, plant the seed in a hot-bed, or in elevat-

en hills, well manured with rotten horse-dung, and covered with glazed frames. For later use, they should occupy rich, light, and warm soil, well mixed with manure; or a good shovelful or more may be put into each hill. Plant in hills about four feet apart each way, elevating the hills a little above the level of the ground. Put in eight or ten seeds into each hill, and cover them half an inch deep with fine dirt, and as in all other planting, press the earth a little over the seeds with the back of the hoe. When the plants are up, examine them closely, as they are frequently attacked by the yellow bug, or fly. To prevent this, take soot, sifted ashes, and ground plaster, equal parts of each, well mixed together, and dust the plants with it. If the plants are dry, sprinkle them with water before you dust them. Keep the ground loose and clear of weeds, and in dry weather water your plants freely. After they have attained a vigorous growth, and the danger from insects is over, they may be thinned, leaving two or three of the most thrifty in the hill. Those intended for pickling, may be planted later. The cultivation and management of these is the same as the others, excepting that the hills should be at least five feet apart each way. Nip off the first runner bud of cucumbers and melons, and they will become more stocky and fruitful.

Egg-Plant.—Sow in hot-bed or other protected place, very early in the spring, and transplant into rich ground, two to three feet apart. The seed does not vegetate freely, and repeated sowings are sometimes necessary.

Endive.—Sow from May to July in shallow drills; thin out the plants to stand eight to ten inches apart; tie up to blanch as needed.

Sea Kale.—Plant in hills two feet apart. It is forced into growth in the spring, blanched, and used as asparagus.

Leek.—This is so hardy as to endure the extremes of heat and cold without injury. Sow early in drills, eighteen inches apart, and thin the plants so that they may be six inches apart.

Lettuce.—This requires a mellow soil. It should be sown as early in the spring as possible, or it may be sown late in the fall for early use the following spring. To obtain a constant and regular supply throughout the season, it should be put in every month from March to September. It may be sown broadcast, moderately thin, or in rows from twelve to eighteen inches distant, according to the usual size of the different kinds. Rake in the seed lightly with a fine tooth garden-rake. When the plants are up, stir the ground lightly when it is dry, and clear out the weeds. The most tender salad is produced when allowed to grow up thick. This may be early and continually thinned for use. Those intended for large heads should stand eight or ten inches apart; the hardy kinds, such as the large green head, ice cross, and brown Dutch, may be sown in September, and covered with straw at the approach of severe weather. Any kind may be sown in hot-bed in March, and transplanted in the open ground at the proper season.

Melons.—Treat the same as cucumbers, except planting wider apart, say ve to seven feet.

MUSTARD.—The white and broad leaf kinds are excellent for salad or greens. They should be sown very early in the spring, in a rich, warm soil, in shallow drills, ten inches apart, and kept clear from weeds. After the crop is off, the ground may be planted with other crops.

For grinding, the brown mustard seed is the best, and may be sown broad cast or in drills, and kept clean from weeds. This is now cultivated extensively as a field crop, by sowing it broadcast or in drills from one foot to eighteen inches apart. Mow it when ripe, and cure it like grain or hay, and thrash out the seed in a grain thrasher. It yields from ten to fifteen bushels per acre. It is a great exhauster of the land when grown for seed, and requires a rich soil. It is sometimes plowed in green to enrich the land. When sown in drills, from one and a half to two quarts of seed are enough per acre; broadcast, it requires four quarts per acre.

NASTURTIUM.—The flowers and young leaves are used as a salad. The seed-pods are gathered while green and tender, and pickled.

OKRA.—This is a wholesome vegetable and much used in soups. Plant in May or June, in hills two or three feet apart, allowing two or three plants to stand in a hill. The seed is liable to rot in the ground, and should be put in thickly to secure the requisite quantity of plants. Very rich ground is required for this vegetable.

PARSLEY.—Sow early in the spring, in rows or beds. If the seed is soaked in warm water some hours immediately before sowing, it will vegetate more speedily. When sown dry it will sometimes lie in the ground two or three weeks before it vegetates.

PARSNIP.—This root is among the most valuable raised for farm stock. It requires deep, rich, loose soil, and may be sown at about the same distance as carrots. The seed need not be soaked before sowing; but it should be put in the ground early, while the ground is wet, which will ensure its immediate vegetation. Unlike all other cultivated roots, except the artichoke, the parsnip may remain in the ground throughout the winter, without injury from frost; but care is requisite for the removal of all standing water, or decay will inevitably follow. About two pounds of seed are required per acre.

PEAS.—These are adapted to almost any dry soil; yet they will give a much greater yield on rich land. Fresh manure is not good for either peas or beans. They will bear a much heavier soil than the bean, good clays being highly favorable to their growth. The fields intended for peas should be prepared by fall plowing, and the seed may be sown, as soon as the land is sufficiently settled in the spring after the heavy frosts, either broadcast or in drills, and harrowed or plowed in two or three inches deep. In the latter case, they will admit of light plowing or harrowing immediately after they are up, by which weeds will be exterminated and the growth of the crop promoted. Where the soil is adapted to them, and the seed takes well, broadcast sowing is equally efficient in preventing weeds, as their vigorous growth effectually overshadows and keeps them in subjection The best kind for field sowing is the grass pea

and the marrow-fat for garden-culture. Earlier kinds should be selected in part, for the garden. Sow at the rate of two to four bushels per acre.

Pepper.—Sow in drills, on a warm border, late in the spring or early in summer, and thin them to stand sixteen to eighteen inches apart. Or they may be sown early in the season, in a frame or flower-pot, and transplanted.

Potatoes.—This root is the product of almost every soil, although dry, rich land is best suited to them. A sod turned over in the preceding autumn, so as to become well rotted in the spring, is perhaps the best suited to give a fair yield, and at the same time a fine, healthy, well matured crop. They may be planted in hills or drills. Whole potatoes, of a medium size, are better for planting than small, or large cut ones. They should be well hilled up in hoeing. The hills may be about three or three and a half feet apart; or if in drills, they may be three and a half feet asunder, and the potatoes placed about ten inches apart. There are a variety of choice potatoes, which are popular times in different parts of the country, and which, from the introduction of ew and favorite varieties, or the older ones becoming poor bearers, or from other causes, fall into disuse. Among the best of the present time may be mentioned the kidney, the pink-eye, &c. It requires from twelve to twenty bushels of seed, for planting an acre.

Pumpkins.—This is a valuable field crop for fall and early winter-feeding, for cattle, sheep, and swine. It is usually planted among corn and potatoes, which is a good practice. But it may be advantageously grown by itself on a rich, dry, well pulverized soil, planting in hills, at a distance of six to seven feet apart each way. Most of the cultivation may be done with the cultivator. The large yellow pumpkin is the best

Radish.—These may be sown at all times in a warm soil. The land should be well manured, deeply dug, and raked free from clods and stones. For a succession of crops, sow once in two weeks.

Rhubarb.—This is cultivated for the leaf stalk, which possesses an agreeable acidity, and resembles the gooseberry when made into pies or tarts; and it is an excelleut substitute for it, as it is fit for use before green fruit can be had. It is propagated from the roots, which, in deep mellow soil, give an immediate and large return.

Ruta Baga or Swedish Turnip.—This may be sown on land prepared similarly to beets, either broadcast or in drills. The former method is preferable in one respect, as it gives a much larger supply of food to the turnip beetle or fly, which may still leave enough for the farmer after it has eaten its fill. Early sowing is best, as it insures a good crop of large roots, or if it is cut off by drought or the fly, it leaves sufficient time for resowing. Soaking the seed in the most offensive curriers' oil for two or three days, and then rolling in plaster, is a help to the young plant, and they both assist its rapid growth, and the oil is nauseating to the insects in its first tender leaves, which are most li-

able to destruction. About one and a half pounds of seed is required per acre.

Salsify or Vegetable Oyster.—The roots are boiled like carrots, as a vegetable dish; or after being par-boiled, made into cakes, with paste, and fried like oysters, which they closely resemble in flavor. Cultivated in all respects like the carrot.

Sorrel.—The garden sorrel is used as a salad. Sow in June, in drills, and thin the plants to twelve inches apart.

Spinach.—This may be sown at every season. It produces thick, succulent leaves of a large size. It may be sown either broadcast or in drills. For spring or summer use, sow as early as the ground can be tilled, and afterwards at short intervals. For winter and early spring use, sow middle and last of autumn. The latter sowing will need a sprinkling of straw or long manure on the arrival of cold weather. The ground cannot be too rich for spinach, and the stronger it is, the more succulent will be the leaves, and of course the more delicate and tender.

Squash.—Cultivate the same as cucumbers and melons.

Tomato.—For early use, sow in hot-beds and transplant into warm soil, setting the plants in rows three or four feet apart, which should be trained on poles.

White or English Turnip.—This crop is raised most successfully on newly cleared land, which is well coated with ashes and charred vegetable matter; or on a fresh sod which has been long in grass and turned over the last of May or early in June, and on which sheep have been folded till they have covered it well with manure. Good seed sown on this, after thorough replowing and harrowing till it is sufficiently mellow, at the rate of one and a half pounds per acre, and brushed in, will generally insure a good crop.

For further particulars on the culture of grass, grain, and roots, we refer to the American Agriculturist, and Compend of American Agriculture, where the most minute directions may be found for nearly all these different kinds of crops.

GRASSES AND CLOVERS.

There are many kinds of plants that belong to the clover family, such as the scarlet, yellow, and Bokhara clovers, sainfoin, trefoil, &c.; but for various reasons, which we have not space to enumerate here, they have not flourished well in the United States, and we forbear encumbering our pages with them. The same remarks will hold in respect to bent grass, rib grass, &c., &c. We have either tried on our own farm, or seen tried by our friends, nearly all European grasses and clovers, and the result is, that they are not equal to those we mention below, and our farmers, therefore, have nearly abandoned their

culture. We believe that some of the indigenous grasses of America may be profitably cultivated, and we recommend experimenting with them in preference to European grasses, already so often tried and found wanting.

Blue Grass.—This is, properly, the *Smooth-Stalked, June*, or *Green-Grass* of the Northern States, and is deemed invaluable at the South-west, yielding a luxuriant winter forage, which is cropped by the stock on the ground. It is a valuable pasture grass at the North, being hardy and self-propagating, and with the white clover, spontaneously filling up every vacant space of waste ground in our good clay lands. But as a meadow grass, it is lightly esteemed, coming to maturity some weeks before the Timothy or clover, and by the time they are fit to cut, yielding only a small quantity of withered grass. Like the white clover, it ripens and sheds its seed, so as to give a prolific growth of fresh plants for the fall and spring feed. Few plants equal this and the white clover for fattening qualities, or the production of milk. Both yield a superior quality and a large quantity of butter. When cut with white clover for hay, it should be housed as green as possible, and well salted. This grass is very desirable for lawns, as it grows fine and thick, and the turf is firm and elastic under the feet. It should be sown at the rate of ten to fifteen pounds per acre, in the autumn or winter at the South, and early in the spring at the North. Top-dress with fine compost, guano, or ashes and lime.

Red Clover.—This is one of the most important crops in the United States. It grows readily on almost every soil, from Maine to Texas; and under proper treatment, almost everywhere yields profitable returns. By large numbers of farmers, especially in New York, New Jersey, and Pennsylvania, it is used extensively as a fertilizer in their rotation for wheat, for which nothing is better adapted. It also affords one of the most profitable crops of hay. For this purpose it is usually raised in connextion with Timothy, a practice which is objectionable, on account of its maturity for the scythe, being some time earlier than this grass. It does well sown with orchard grass, as the two ripen about the same time. All soils are suited to it, if dry and fertile. It may be sown in the autumn or winter at the South; at the North with winter wheat or rye, when the snow is just disappearing in the spring, and while the earth is still thrown up by the effects of frost, or as early thereafter as possible. No subsequent harrowing is then necessary. It may also be sown with oats or barley after the latter have been harrowed in. It should be cut before the bulk of the blossoms are turned brown, and after lying in the swath until wilted, turned over without spreading, raked and cocked the same day; and when sufficiently cured in the cock, put in store, with the addition of a peck to half a bushel of salt to every ton. There are several kinds of red clover; the large or northern, the meadow, and the dwarf. The two former are usually cultivated. Clover, and all other crops, when sown upon light or sandy lands, are greatly improved by the use of the roller. From eight to sixteen pounds of good seed is required for an acre, more being necessary on stiff or old soils than on new and lighter ones.

White Clover.—This is a valuable herbage for pastures, but does not grow

to a sufficient size for profitable hay. Clays and calcareous soils are best adapted to it, and on these, if in good condition, it grows spontaneously and in great abundance. Plaster, with a reasonable degree of fertility, will always insure a luxuriant growth of the clovers, often bringing them into existence where their presence had scarcely before been noticed. Sow from four to eight pounds per acre.

Lucerne.—This is cultivated to considerable extent in the neighborhood of our cities for soiling cows. It requires a very deep, rich loam, as it sends down its long tap roots to a depth of 2 to 5 feet. It must be kept clear of weeds the first year, after which it completely covers the ground. It may be cut several times in the course of the season, and yields a large quantity of fodder, somewhat inferior in its nutritive qualities to the red clover. Plaster, or bones in considerable quantities, ground and scattered broadcast, and other manures, are essential to its continued productiveness on the same land. It requires from ten to fifteen lbs. of seed to the acre, if sown broadcast, or two thirds of the quantity if sown in drills nine inches apart.

Orchard-Grass.—Orchard-Grass of the United States, is what is called rough cocks-foot in England. It comes forward earlier than any other grass in the spring, and produces most abundant crops in quick succession, yielding several large cuttings of excellent hay in one season, and furnishing a great quantity of nutritive pasturage. It requires a dry and good soil, and should be cut before it ripens, or closely fed, to secure its full value. Sow at the rate of one and a half to two bushels per acre, for if the seed is not sown thick, it will come up in tufts. It is important that this grass should cover all the land.

Herds-Grass or Red-Top.—This is a valuable grass for very moist soils, yielding a large return of good hay. It is cultivated in the same manner as Timothy, but requires a moister soil. In New England, a variety of this species is usually known by the name of *Red Top*. The quantity of seed required to sow an acre is from 12 to 16 quarts.

Ray-Grass.—Perennial ray-grass or rye-grass, yields very readily and with comparatively little trouble, an abundance of sound, healthy seed, and is certain in its growth. It starts early in the spring, and is much relished by all kinds of stock. It answers equally well for a course of mowing and pasturing for two, three, or seven years

There is a variety of this plant known by the name of "Italian Rye-Grass," of only two years' duration, which is almost universally sown in England and some other parts of Europe, either with or without clover, among grain-crops, with the view of obtaining a crop of hay the second year. It attains a greater height, and produces a longer, broader spike of flowers than the perennial rye-grass; and the produce in hay is considered greater than that of any other biennial grass, equally palatable to cattle. The quantity of seed employed in sowing an acre, is from 10 to 16 lbs.

Tall Oat-Grass.—In the Middle States, particularly in Delaware, this is one of the best grasses for early soiling. It grows rapidly and produces a con

stant succession of luxuriant fodder, whether cut or fed on the ground. A stiff clay, as well as other soils, is suited to it. It should be sown in the spring, either by itself or on winter or spring grain. It should be fed green, as it is too coarse and dry when cured to make good hay. Sow from 12 to 16 quarts per acre.

Timothy or Herds-Grass.—This is also called foxtail, and meadow-cat's tail. It is among the best grasses for hay in the northern parts of the United States and the Canadas. Good clays or loamy lands are best suited for it. Unless sown late in the season, it will not require harrowing, the rains planting it with sufficient depth where the surface is light or well mellowed with the harrow. It should be suffered to remain till the seed is rather past the milk, and getting into the dough, when it may be cut, and in this state much of the seed will germinate. Enough of the seed is thus scattered upon the ground, to renew and keep the permanent meadows in high condition as to productiveness. It is suited either to a moist or dry soil. If sown with clover, at the proper season, 8 quarts of seed, with 6 to 10 lbs. of clover, on a well pulverized surface, will give a good coating of grass; but on a stiffer soil, or when an immediate thick growth is desired to keep all weeds down, this quantity may be nearly doubled. Although it yields little or no after-math, when cut late, yet Timothy makes a rich productive pasture. It may be sown in August or September, or early in the spring, at the rate of 12 to 16 quarts per acre

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FERTILIZERS.

We shall treat only of such fertilizers as are usually kept on sale; and in doing this, it is impossible to give anything more than brief, general directions as climate, the nature of soil, the crop to be raised, and many other particulars must be taken into consideration, in their proper application. Great waste is often made in applying manures. For example, bone-dust is sometimes applied where there may already be sufficient of the phosphates in the land; lime, where the soil is full of it; ashes, on new and rich land, &c., &c. In such cases as these, manures have little or no effect for a time, or until crops have partially exhausted them. Barn-yard manure, peat, and muck, are often applied to wheat and other small grain crops, when they only serve to injure the grain, by forcing a large growth of straw. Grass, corn, roots, and some other crops, may be successfully raised with manures of almost any kind or quantity; and as a general rule, the small grains should succeed these crops, at which time, ashes, plaster, bones, or lime may be applied; and if the soil be poor, a top dressing of guano, rotted barn-yard manure, or composts of fish with peat and muck, may be added. For minute descriptions on all these points, we would again refer to the American Agriculturist and Compend of American Agriculture.

Wood Ashes.—These may be used leached or unleached, with good effect at all seasons, and on all kinds of soils, though they best suit light sandy

or gravelly soils. From 10 to 70 bushels per acre are applied. Grass and turnips are most benefited by them, and they have a marked effect on corn, wheat, and other small grains. They should be spread on grass lands early in the spring, or just after mowing,—around the stalks of corn after the first hoeing, spread broadcast over the turnip crop after sowing, or be brushed in with the seed, or applied in the same way to wheat, rye, and other small grains, in the fall or spring. Anthracite coal ashes are also found to have a marked effect on grass and corn.

Bone Dust.—This may be applied like ashes, except in less quantities; ten to thirty bushels per acre is sufficient for a single application. Its effect on Indian corn is not so good as ashes. It best suits grass, wheat, and turnips.

Charcoal Dust.—This also may be applied like ashes, but in larger quantity, from twenty to two hundred bushels per acre. It absorbs moisture, ammonia, and other gases from the atmosphere, and is therefore particularly valuable on light soils. Keep it as near the surface as possible. It is an admirable mixture in composts of all kinds, especially such as abound in putrescent manures. It arrests and holds the ammonia contained in them, and removes all unpleasant smell.

Guano.—*Caution in application.*—Place the guano so that it will not touch the young roots, or stalks of corn, potatoes, cabbages, tobacco, sugar cane, cotton, or any plant that has but one stem; as it is so powerful that the smallest portion injures the plants, if it comes in contact with them before its strength has been diffused through the soil, by rains or dews. With grass and small grains, this caution is not as important, as other shoots from the roots will immediately supply the place of those killed.

Preparation.—Before using guano, pass it through a fine sieve, and all lumps remaining, break up, and these pass through the sieve. Then take at least four times its bulk of mold, or light loamy soil, and pass this through a coarser sieve, and mix it in layers with the guano. Let this compost lie a few days—several weeks would be better—then turn it over and mix well together, and it is fit for use. Some prefer adding the guano to ten or twenty times its bulk of soil for a compost, without sifting it, but mix them together in alternate layers as well as it can be done with a shovel. Sifting, however, is best, as it is done so much more evenly. Sawdust, spent tan-bark, peat, &c., are good materials with which to mix guano; but charcoal is better than either, as it absorbs the ammonia, and is in itself an excellent manure. When convenient to be obtained, plaster of Paris ought to be used in the compost, at the rate of thirty to fifty pounds for every one hundred pounds of guano; it acts in the same way as charcoal. Lime and ashes must be avoided in composts, as they rapidly expel the ammonia, the most valuable part of the guano. Muck, if possible, should not be used for the compost, as it is too moist and tenacious to form a proper mixture. The same objection holds against clay or any tenacious soil. Yet, if there be no other soil at hand, muck or clay may be thoroughly dried and pulverized, and then used. Guano should not be mixed with

barn-yard manures, nor indeed with any *moist* substance, as these cause it to undergo the decomposition requisite to promote vegetation. The compost should be made under cover, unless the weather be dry.

Quantity applied per Acre.—This depends upon the kind of soil and its condition, and the kind of crop to be grown. From two hundred and fifty to four hundred pounds of guano per acre, is the safest quantity to apply. It acts quickest in a light sandy soil or loam, and is excellent to start crops on cold, moist land. It hastens the ripening of crops on all kinds of soil.

Guano should be spread broadcast upon grass lands, early in the spring, and directly after mowing; and on grain, early in the spring, or in the autumn directly after being sown. When applied to corn, either pure or in compost, a tablespoonful or so may be put round each hill, and a little dirt thrown over, and then drop the seed, or it may be hoed in round the corn the first time hoeing Apply it in the same way to peas, beans, potatoes, and other root crops, melons, &c.

Steeps and Liquids.—For one pound of guano, use ten to twenty gallons of water; or at the same rate for a smaller proportion. Stir it well and cover over the vessel tight, so as to prevent the escape of the ammonia, and let it remain from one to three days before being used. Water *around* (*not upon*) the plants as occasion may require. If the liquid touches the plant, or its leaves, it is liable to burn it. Previous to watering, stir the earth well around the plant. Corn and other seeds may be steeped in this liquid, from three to twenty-four hours before sowing. It then comes up unusually quickly, and grows rapidly.

Lime.—This may be applied at any season, at the rate of twenty to two hundred bushels per acre; but moderate and more frequent doses are preferable. Like charcoal, it does best near the surface, and in other respects may be applied like it. It best suits a clayey or loamy soil; its efficacy on light sands and gravel, unless with the addition of manures or vegetable matters, is much doubted. Lime is easily kept in large heaps in the open air, by throwing a little water on the top, which slakes sufficient to make a fine smooth crust over the whole. This soon dries hard, and forms a roof impervious to the rain. When the lime is to be used, the heap is broken into near its base, and whatever is wanted is taken out, and another crust is formed over this broken part, in the same way as above. Lime is frequently impure, and an analysis of it should be required before purchasing. About thirty-three bushels go to the ton.

Plaster of Paris.—Sow this broadcast upon grass or grain, early in the spring, at the rate of two or three bushels per acre. It requires to be sown early, so as to have the benefit of moisture, and to ensure its decomposition. It best suits clover and the broad leaved plants, and is very good for potatoes and turnips. On corn, grass, and the smaller grains, it has a good effect.

Poudrette.—This is an excellent manure to start corn and other products, and give them a quick growth, but its effect in small quantities is not lasting; a second dose, therefore, ought to be added at the second time hoeing. Two to

five barrels are enough for one acre. For corn, put one gill into the hill, over or under the seed, when planted. Potatoes should have two gills per hill, and other crops in proportion. For soaking seeds, dissolve in the proportion of one quart of poudrette thoroughly in a gallon of water, to an extent sufficient for the purpose required, and then soak the grain or seed in the solution. The soaking must take place immediately before planting or sowing. By this operation, the corn, grain, or other seeds, will start sooner, be stronger, and less liable to attack from worms or birds. But if kept in the solution too long it may injure the germinating principle of the grain or seed. After it comes out of the liquid, the seed may be rolled in ashes, plaster, or sand, to separate it. Every farmer may make his own poudrette by mixing the fæces with peat or muck, or by drying it with charcoal dust, or plaster of Paris. Either of these substances takes away all unpleasant smell.

Salt.—This may be used at the rate of five to thirty bushels per acre. It is inoperative applied near the seashore, where salt water or spray is already in excess on the land; but on all other lands not already fully supplied with it, it is beneficial. It can be sown broadcast or incorporated in the compost heap. Mixed with lime and its compounds, it undergoes decomposition, producing a variety of new combinations, most of which have a strong attraction for moisture. Salt and lime produce vegetable decay quicker than salt alone. With plaster and lime, it will supply soda and sulphuric acid, and their various compounds, cheaper than any other materials. Applied at the rate of ten bushels per acre to grass and vegetables, it makes them much more productive, sweeter, and more nutritious. We recommend its use, wherever salt can be cheaply obtained. We have seen thousands of gallons of fish and other brine thrown away in our towns and cities, which is invaluable for adding to the manure heap.

FRUIT TREES.

Before planting an orchard, the ground should be thoroughly *subsoiled or trench plowed*, to the depth of eighteen inches or two feet. This is always done in Europe,

but seldom thought of in the United States; and yet we consider it the first and most important operation in the preparation of ground for an orchard, unless it be so rocky as to render this impossible.

Transplanting.—It is frequently the case, that a tree which has received all the care and attention which can be bestowed upon it by the most experienced nurseryman, is transplanted to a soil of very inferior character, and being thus stunted in its growth, is the frequent cause of dissatisfaction to the purchaser. The planter should therefore bear in mind that, with the exception of very fertile alluvial bottoms, it is difficult for the soil in which a tree is planted, to be too rich, and that the rapidity of its growth, and its subsequent productiveness,

are very much influenced by the proportion of fertilizing matter contained in the soil.

After the trees are set out, the ground should be well cultivated, and if a poor soil, as highly manured as the means of the cultivator will admit. It is impossible for a tree to flourish as it should, when the roots are surrounded and covered with a thick sod. When the tree is isolated, as in a garden or lawn, a rich compost of earth and manure should be dug in around it, care being taken that no unmixed manure be allowed to come in contact with the roots. The ground about them should be kept mellow until the tree is of large size; and it would also be well to dig in a portion of manure about the roots every spring.

Many of the most experienced cultivators regard the autumn, immediately after the first hard frost has arrested the growth, as the best season for transplanting every variety of trees but evergreens, which should be planted in the spring. Where, however, it is not convenient for the cultivator to give them attention in the fall, deciduous trees may be deferred until spring. In sections where the cold is somewhat severe, as on the Western lakes, and in some parts of New England, it is more safe to plant the stone fruits and pears in the spring; and if they are imported in the fall, to keep them in a dry cellar until spring.

The reason for the preference for the autumn is obvious. When trees are transplanted at that season, the earth during the winter becomes well settled about the roots, and they are ready to throw out fibres in the spring. The spring is preferred for evergreens, for the reason that, unlike deciduous trees, they maintain a less torpid vitality during winter, and need sustenance from the greater activity of their roots; and experience has shown, that they succeed best when thus planted. When a tree is removed, great care should be taken to preserve the roots uninjured and entire; if this precaution is omitted, the top should be lessened in proportion to the diminution of the roots.

When the tree has been some time out of the ground, it is well to immerse the bodies and roots in water for twenty-four hours; this will much benefit it, and advance its vegetation. The holes for receiving them should be sufficiently large to admit the roots without crowding or bending,—from three to six feet in diameter, and from one to two feet deep, according to the size of the trees. The subsoil should be entirely removed to this depth, and its place filled with rich mould, well combined with compost or fermented manure. All bruised or broken roots should be shortened and smoothly pared with a knife. Let a person hold the tree upright, while the operator pulverizes the earth, and scatters it among the roots. Let the tree be shaken gently while this is done, and the earth be carefully filled in around every root, even the smallest fibre, for it is important that the soil should come in contact with every portion of the roots. When the hole is three quarters filled, pour in a few gallons of water, according to its size, and after it has settled away fill up the hole, pressing the earth around the tree with the foot. Earth watered in this way, will retain its

humidity a long time, while water poured on the surface, after the hole is filled, is very injurious, causing the top of the soil to bake to such a degree as to prevent the access of air and moisture, both of which are highly essential to the growth of the tree. When the weather is very dry, put straw, hay, leaves, or even fine brush, if nothing else is to be had, around the bodies of the newly transplanted trees, to retain the moisture. This is infinitely better than watering them. One of the most universal and fatal errors in planting trees is placing them too deep; we have known many fine and thrifty trees die from this cause. They should not be planted more than an inch deeper than they stood in the nursery, and if the frost is likely to heave them the first winter, a small mound can be heaped about the stem, to be removed again in the spring.

In attending to the preceding suggestions, we feel assured that the cultivator will be amply repaid for any extra trouble or expense, by the consequent increased growth, beauty, or productiveness of the tree.

SOILS PROPER FOR DIFFERENT KINDS OF FRUIT.

The Apple.—This will succeed on almost any soil not too wet; a rich gravelly loam will, however, ensure the finest trees and fruit. Before planting, the ground should be subsoiled and well cultivated with corn or potatoes, and enriched, if necessary, with a good quantity of manure. After the trees are planted, the orchard should be kept in cultivation for some years; and even after the trees become large and are in full bearing condition, the ground should not be kept in grass more than three or four years successively. Where there is leisure, it is a good plan to thin out the fruit when the crop is too abundant.

The Cherry.—This does best in a dry, rich soil, but bears abundantly even in stiff clays, when fertile and well drained.

The Pear.—This succeeds best on a rich, clayey loam, with a gravelly subsoil, but will grow and bear fruit on a poor soil, provided it is not too wet. A heavy clay soil should always be avoided, unless well drained.

The Plum.—A clay soil well drained, or rich loam, best suits the plum.

The Peach.—A fertile sandy or light gravelly soil, is decidedly the best for the peach, though we have seen it flourish very well in a warm climate in clay soils, where no surface water could remain to their injury.

Pruning and Training.—All trees require more or less pruning. With young trees the knife is required to form a symmetrical head, to induce luxuriance of growth, and to cause early fruit bearing. Bearing trees in orchards, also require frequent pruning, to relieve the tree of all branches which are weak and crowd upon others, or uselessly consume the nourishment afforded by the root. It is also frequently required to check too great a luxuriance of growth, which often induces disease and seriously affects the longevity of the tree. Care and judgment, however, are necessary, and there may be often

danger of too much pruning. When a tree is healthy, produces well, not too much crowded in its branches, and free from suckers on its boughs, it will in general require very little pruning. No suckers should be allowed to grow from the root, as they divert a material portion of the sap from the branches. There is much difference of opinion respecting the proper season for pruning, but our experience is that the early part of summer is the best; the sap being then in full flow, the wounded part quickly heals over, while in winter, the branch to which the knife has been applied, will be frequently found dead several inches below the wound.

Pruning, to induce early fruit bearing, may be advantageously practised when the growth is so luxuriant that few or no blossom buds are formed. In this case, the extremities of the twigs should be shortened, and the sap being accumulated in a smaller portion of wood, forms fruit buds. The most effective mode of pruning, however, is applied to the roots. For this purpose dig a trench, early in November, around the fruit trees to be root-pruned, then cut off the roots with a sharp spade or knife made for the purpose, and apply manure. By continuing this practice every year, early fruitfulness is secured and the trees are brought into so compact a shape, that, being planted five to eight feet apart, a sort of miniature orchard may be formed on a comparatively small piece of ground.

The quenouille mode of pruning and bending down of the limbs is practised in France and Belgium with much success. By it the circulation is impeded, nutritious matter accumulates, and flower buds are formed. The branches are bent down and tied below the horizontal line any time during summer, while the shoots are flexible, and after being thus confined a short time, they retain this pendent position. This is a most certain mode of inducing fruitfulness, but, though ornamental, is a somewhat troublesome form of tree. In Great Britain, and in some parts of the continent, where they have not the heat of our summers, fruit trees are trained, as espaliers, either upon a trellis or upon walls, and it is no uncommon thing to see large gardens divided into numerous small compartments by brick walls, on which are trained a variety of fruit trees. In our fine climate this is unnecessary, and nearly all trees will succeed well as standards.

Where the curculio abounds, the farmer or gardener may advantageously cover all his stone walls or wooden fences with plums, peaches, apricots, or nectarines. When trees are planted thus against a wall or fence, it is well to have them a year old, and to retain the branches either horizontally, or in the fan mode, in which the branches are made to radiate from the root, as a common centre.

Fruit trees vary so much in different latitudes, that it would be of little use to give a select list; we refer therefore to the catalogues of the Nurserymen for this, as well as many other things we are obliged to omit for want of space. For the same reason we cannot treat of other fruits, the apricot, nectarine, fig, raspberry, gooseberry, currant, strawberry, &c., &c.

ORDERS FOR FRUIT TREES.

It is very desirable that all orders should be received *very early* in the season, that we may have as much notice as possible, and send the trees to their destination at an early period after the opening of the season of transplanting. For want of care on this head, many orders arrive when it is no longer safe to take up trees, and they are necessarily left over until the next season. We would urge upon the attention of Southern and Western purchasers, the great importance of sending their orders as early as August or September. In the spring, vegetation is often far advanced at the South and West, before the frost will allow the trees to be taken up at the North; and if sent at that season, they frequently vegetate on the passage, and cause great loss to the purchaser. In the fall, no difficulty of this kind will occur, and trees are annually sent to the far western States at that season, with entire success. The utmost care is taken to label distinctly, according to the invoice sent, every variety of tree or plant ordered. They are packed in matted bundles or boxes, according to the distance and probable exposure.

Ornamental Trees and Shrubs.—These can be had of every variety They are fully enumerated only in the catalogues of Nurserymen, and various books upon these subjects.

DOMESTIC ANIMALS.

Our advice to the purchasers of domestic animals is, *always to choose good ones*, even at a much higher price than ordinary: for with select males, one can rapidly breed good ordinary stock from rather indifferent females of the country. The cost of transportation, and the keep afterwards, is no more for a good than a poor animal; and there is the additional satisfaction about their possession, that one has something for his money worth breeding from.

Season for Purchasing and Shipping South.—The best season for purchasing is in the fall of the year, as stock is then cheaper and can be more safely transported. Orders, if possible, should be forwarded at least *two months* before it is wished to have them executed, so as to give sufficient time and opportunity to look about and make selections. For want of this we are often obliged to execute orders at great disadvantage to the purchasers. It must be recollected, also, that Northern rivers *freeze up early in December*, making it quite impossible to procure choice stock after this period, as most of the good breeders reside at a distance from the city in the interior of the country. Many an order for stock which has come to us in the winter we could not execute till the following autumn We hope our Southern friends will bear this particularly in mind, as it will save them disappointment, and us considerable trouble.

September, October, and November, are the proper seasons for shipping stock South, as the animals acclimate much better than when sent out in the spring. It is very hazardous, and almost certain death, to take cows or bulls South at

any other season, for the following reason. The average pulse of the ox is about forty in a minute at the North, while at the South it increases to seventy or more, and rises upon excitement to eighty—just double what it is here. This is a very important change in the arterial system, and if the animal be loaded with flesh, it is much more liable to disease and death.

Horses.—*Thorough-breds* may be bought at various prices, from $200 to $5,000, according to their age and reputation on the course, and as breeders.

Norman Horse.

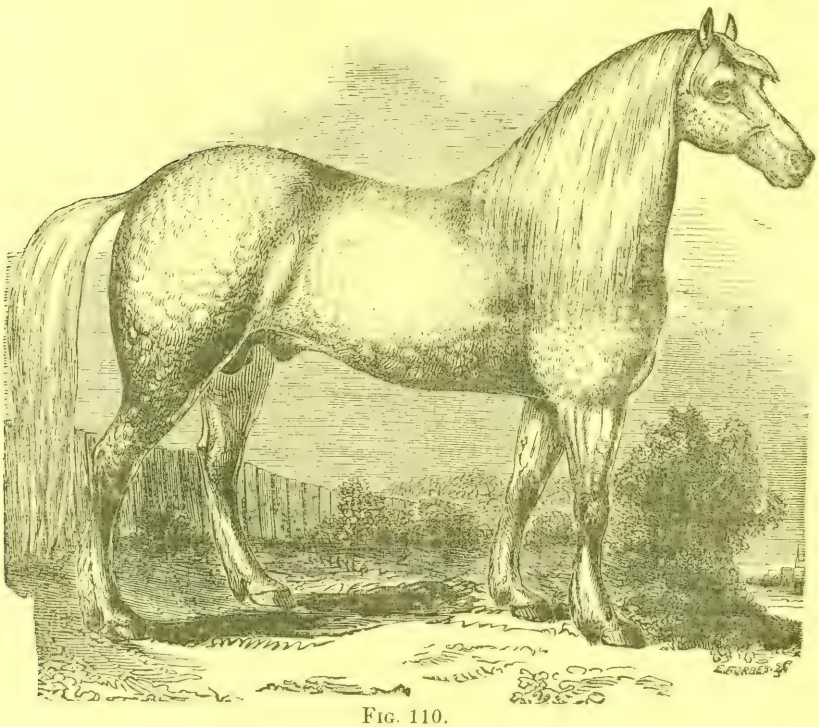


Fig. 110.

Roadsters, from 15 to 16½ hands high, vary in price according to their style, action, and speed. Single horses, which can go a mile in four minutes or ten miles in an hour, will command from $200 to $500; such as can do a mile in about three minutes, and fourteen miles in an hour, are held at $300 to $700; while those still faster, are worth from $500 to $1,500, according to circumstances. Some of the fastest sporting horses sell as high as $3,000 to $5,000 each. Match horses are held, under the same circumstances and prices, as single horses. Good, handsome pairs, six years old or so, may be had from $500 to $600; superior, from $700 to $1,500, according to fancy. Stall on deck must invariably be built at shipper's expense, costing from $8 to $15.

Freight, $20 to $30; feed $7 to $12. When a number are taken, the expense is proportionably lessened. A groom should always accompany horses, as no dependence can be placed upon any one on board ship, to take care of them

DURHAM BULL.

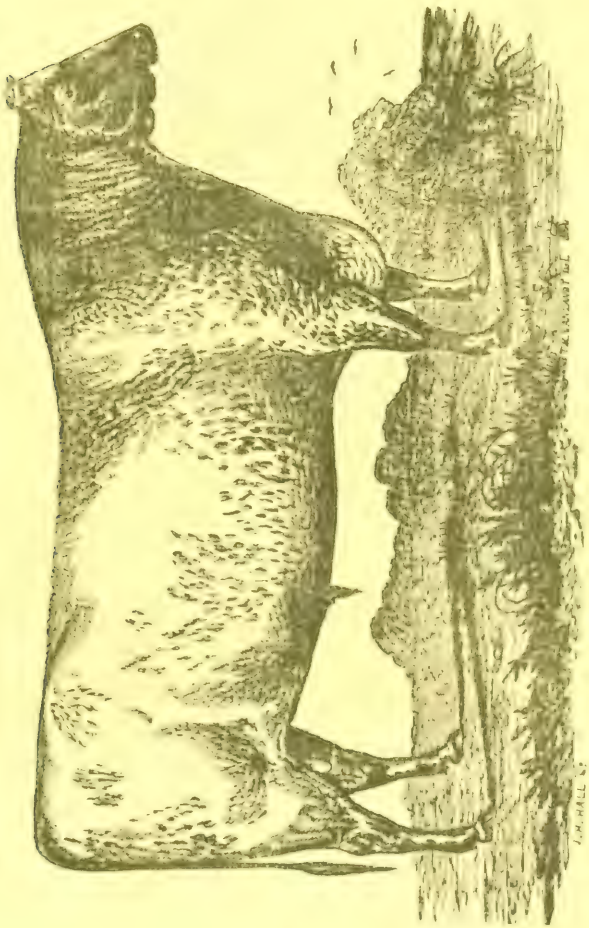


FIG. 111.

CATTLE.—For great milking qualities and good beef, we recommend the *Durham*, and would prefer sending them South, from six months to one year old—never over eighteen months old. The price for good Herd Book animals ranges from $100 to $200; very choice, about $300 each.

The *Herefords* are superior in the yoke to the Durhams, make excellent beef, and are fair milkers. Prices same as Durhams

DURHAM HEIFER.

FIG. 112.

DEVONS.—The same may be said of the Devons as of the Herefords, except they are not so large in size by one fourth. Being a smaller breed than the two others, they are well adapted for the light pastures of the South. Prices 25 per cent. less than Durhams or Herefords.

Good milking cows for family use, are worth from $40 to $50; very superior and well bred, $60 to $75 each.

Freight of cattle South, from $10 to $15 each; feed, $6 to $10. Stalls are generally necessary for their accommodation, and cost from $8 to $12 each, according to the size of the animal.

Saxon Buck.

Fig. 113.

Merino Buck.

Fig. 114

Sheep.—*Fine Woolled.*—The Saxons have the finest fleeces, but are smaller than the Merinos. Ewes yield from two to three lbs. per head, of clean

washed wool; bucks from four to six lbs. Bucks are worth from $15 to $30, ewes from $5 to $15. When a number are purchased they come cheaper.

Merinos.—In this class, the Rambouillets stand the highest. They are the largest in size of any fine woolled sheep; shear the heaviest fleeces, weighing from four to fourteen lbs. clean washed, according to the sex, &c., and of a quality, only one grade inferior to the Saxony. No ewes of this breed will be for sale probably before the year 1850. Bucks can be had for $50 to $200 each, according to age, quality, &c.

Native Merinos may be had from $5 to $50 each. They are valuable sheep, shear about one fifth less than the Rambouillets, and of a quality of wool one grade inferior.

South Down Buck.

Fig. 115.

South Down.—This is a very hardy breed of sheep, yielding the best of mutton, lean, tender, and juicy. Their hams, when properly cured, can scarcely be distinguished from the finest venison. They shear from three to eight lbs per head, of clean wool, according to the sex, &c., of a medium quality, very open and easily worked, and especially suitable for plantation use Mutton is much more healthful than pork, especially in a hot climate, and when accustomed to it, more palatable. Price $15 to $30 each.

Cost of Shipping Sheep South.—Freight from $2 to $5 each, according to the number, size, &c.; feed, $1 to $3. Stalls $1 to $3. If thirty to fifty sheep are taken, they can be shipped at a moderate expense per head.

LONG WOOLLED BUCK.

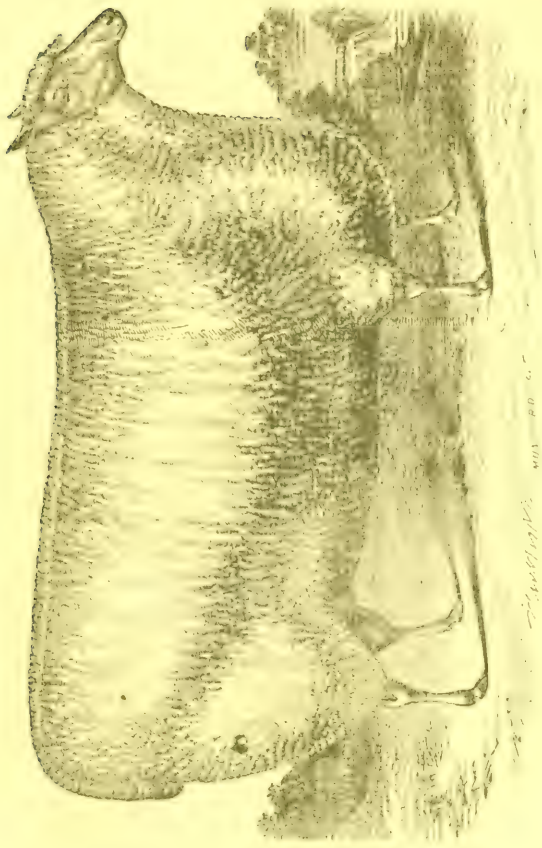


FIG. 116.

LONG WOOL SHEEP.—These are all essentially the same, though they pass under the different denominations of Bakewell, Leicestershire, Lincolnshire Cotswold, Oxfordshire, &c. These are the largest class of sheep in this country. Their mutton is rather too fat for good eating. They shear from five to twelve lbs. of clean washed wool, according to the sex, &c., suitable for worsted combing. Price from $15 to $50 each. They make an excellent cross on the common sheep of the country, both for wool and mutton for plantation use.

BERKSHIRE HOG.

FIG. 117.

SWINE.—The Berkshire breed has hitherto been most highly esteemed, though some pretend to say they do not stand the Southern climate so well as the Neapolitan, or white English breed. These, as well as the Woburn, Bedford, Mackay, Byfield, Grass, Leicestershire, and indeed all good improved varieties, are merely crosses of the Chinese—that is, they are *grade* China hogs. We wish our readers to bear this especially in mind. In giving orders, it is only necessary to say what color and size is required, without signifying the name of the breed, as we profess to be good judges of all kinds of stock, and

can thus make better selections than if hampered with special instructions The China breed are too small and fat to go to the South. They are also delicate and shy breeders. Their crosses are superior to themselves for the farmer. Pigs should be three to four months old, at least, before being shipped.

Prices, caged, $20 to $30 per pair. Older ones come much higher, say $20 to $30 each. Freight $3 to $6 per pair. Feed $2 to $4, according to the length of the voyage.

Observation.—Something must always be allowed for the expense of detention of animals in the city, from the time of their arrival to the sailing of the ship. We conclude by saying, that before any one orders stock they should take into consideration the following three things: *First*, be completely prepared to keep and breed them. *Second*, select none but the best, and these with a reference to improve what you already have. *Third*, have some faithful person, if convenient, to accompany and take care of them. This last, however, is not essential; for out of the hundreds of animals we have shipped West and South, most of them have arrived safely at their place of destination, from the care observed in shipping and providing for them on the voyage

APPENDIX.

STEAM-ENGINE.

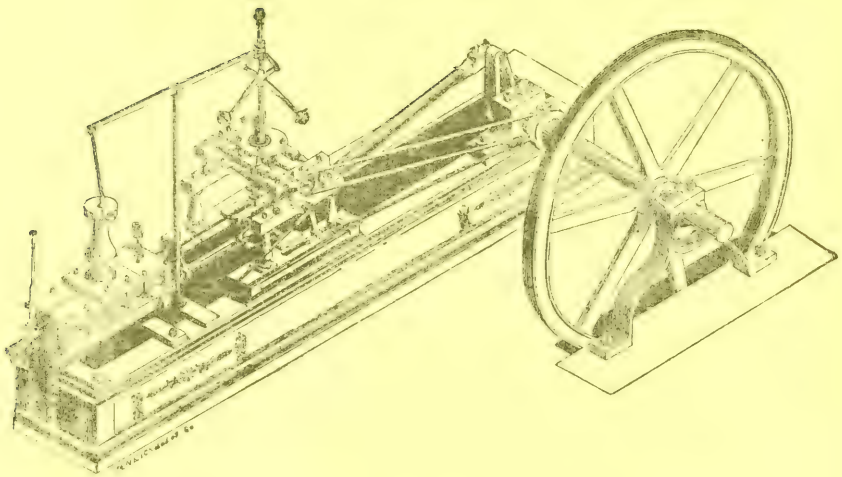
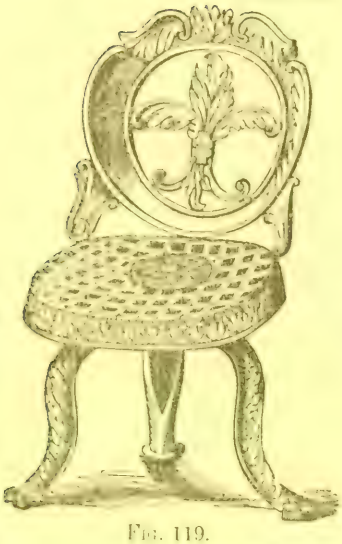


FIG. 118.

Within a few years, the steam engine has been applied in Great Britain to the purposes of agriculture with economy and marked success. It has been found very useful in threshing, winnowing, and grinding grain, crushing linseed, cutting chaff and other fodder for stock, and will do sundry other things on the farm and plantation, such as grinding apples for cider, pressing cotton and hay, grinding sugar cane, sawing wood, pumping water, churning butter, &c., &c.

There are engines made in New York, in a portable form, with boilers attached, which can be transported from one farm to another, at a moderate expense, and they can be easily employed by night as well as by day. All things considered, an engine of this kind cannot be looked upon otherwise than of great pecuniary advantage on a farm, as the expense for fuel and attendance of running one of six-horse power, will not exceed 25 or 30 cents per hour

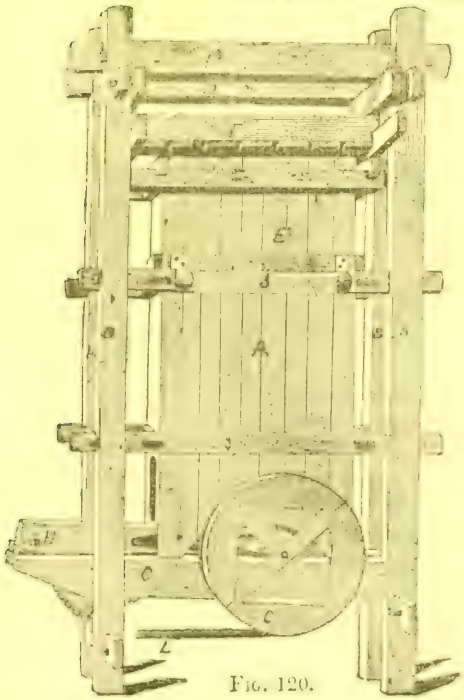
CAST-IRON GARDEN-CHAIRS.



These are made of various patterns, covered with durable paint which will resist the influence of the weather. Price $4 to $10 each.

FIG. 119.

BULLOCK'S PROGRESSIVE POWER-PRESSES.



These presses are in use for compressing cotton, at our seaport towns, and for packing cotton in all the cotton-growing states; for baling dry goods in factories and warehouses; for pressing woollen cloth in the process of manufacturing, and for pressing oil, lard, &c., including every variety of size and form that may be required, for all the various processes for which they are used. Prices from $100 to $4,000 each.

FIG. 120.

THERMOMETER-CHURN.

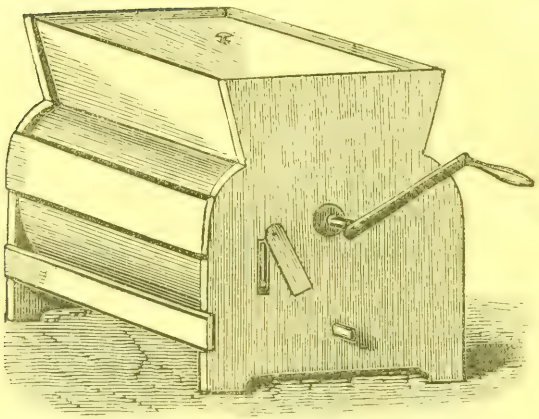


FIG. 121.

This churn is so constructed that the cream or milk is readily brought to the desired temperature without mixing water or other substances, and the temperature certainly and definitely determined, which proves invaluable in the art of making butter.

One improvement consists in the construction of a double bottom made in the form of a semicircle, of two sheets of zinc, or other metal, placed one above the other, the cream to rest upon the uppermost. Between the two sheets forming the bottom, is a space, or chamber, into which may be introduced cold or warm water, as may be required to increase or diminish the temperature of the cream or milk. The water is easily applied by means of a common tin tunnel, through an aperture, or hole, in the side of the churn.

Another improvement is a thermometer permanently placed in one end of the churn, entirely secure from breaking or accident, marked at 62°, and which is always visible, so that the operator may know and determine with certainty when the cream or milk is brought to the proper temperature. If the cream or milk is too warm, the mercury in the thermometer will rise above the mark of 62°, and cold water should be applied in the chamber described; if too cold, the mercury will fall below the mark, when warm water must be used instead of cold. The cream or milk should be stirred or agitated, by turning the crank, while the water is being introduced, to give the cream or milk an equal temperature throughout. When the thermometer indicates that the cream or milk is of the proper temperature, the water may be drawn out through the tube placed for the purpose, when the churning should be performed by giving the crank about forty revolutions to the minute By reversing the motion of the crank, it is liberated, when both it and the dasher, or floats, are drawn out.

WELL-WHEEL.

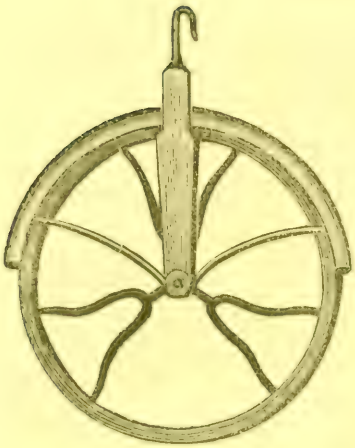


FIG. 122.

This is a cheap fixture with a rope to raise water from wells, and is admirably adapted for raising and lowering light weights about stores and warehouses, as it works with much ease and expedition.

COES' ADJUSTABLE SCREW-WRENCHES.

In the arrangement, combination, and proportions of the parts, these wrenches are acknowledged to be the most convenient, efficient, and strongest now made, and having been long in use and fully proved, are most favorably known among our mechanics.

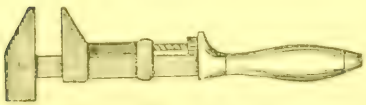


FIG. 122½.

The screw which moves the sliding jaw is most expeditiously and easily operated by the thumb of the hand that grasps the handle, and the space between the jaws is adjusted to the size of the nut or screw, to be turned under any circumstances more easily without than with assistance of the other hand, which may be otherwise engaged.

By placing the screw that moves the traversing jaw by the side of the shank or main bar of the wrench, the full size and strength is retained.

PRUNING SAW.

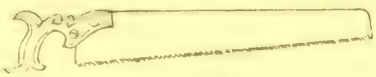


FIG. 122¾.

This form is most commonly used, and is of various sizes, with fine teeth. It is usually from fourteen to eighteen inches long.

TRUCK WAGONS FOR STONE, HEAVY TIMBER, ETC.

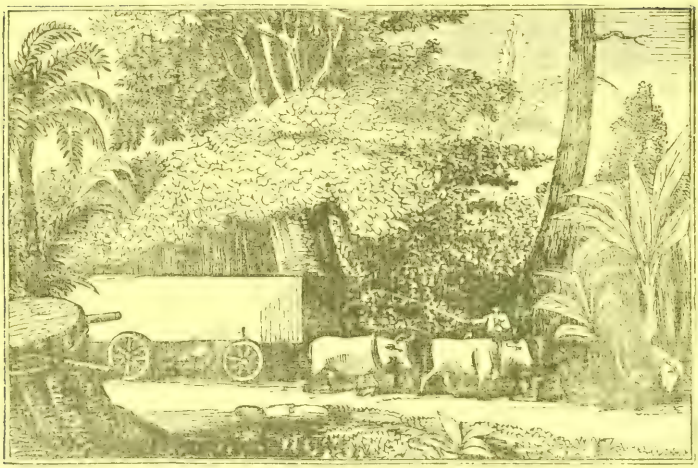


FIG. 123.

These are constructed of various sizes, with four, strong, iron-bound wheels to each, and are adapted for the transportation of heavy timber, stone, large castings, &c. &c. Prices, complete, from $75 to $125 each.

TWO-HORSE WAGONS.

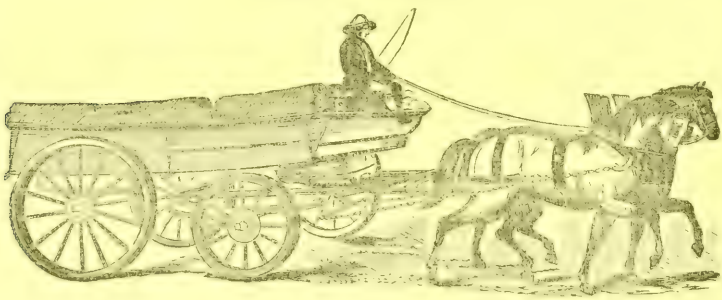


FIG. 124.

These are constructed with light, broad bodies, and will carry, on a good road, from two tons to two tons and a half of grain, or salt in bags, and will load well with hay or straw. The bodies are mounted on patent iron axles, and elliptical steel springs. They are designed for market or farm use, and require to be drawn by two or more horses. They may also be driven with ease, when loaded, at a speed of four or five miles per hour. Prices, for a good article, $85 to $140, complete.

LARGE HORSE CART.

FIG. 125.

The cut above represents a very useful farm and plantation tumbrel cart. It is more convenient than a four-wheeled wagon in many respects

It can be worked either by one or more horses. One or two additional horses can be hitched to it side by side, to draw outside the thills, or they can draw *in tandem*, if preferred. It admits of easy backing or short turning, which is of great advantage in particular locations, and especially among thickly-planted rows upon the field.

But its greatest advantage is in the facility of dumping or upsetting the load, by removing the catch, or staple, which confines the box upon the thills in front, when a little effort sends the box nearly perpendicular, whirling over upon its axis (the axletree), by which the load is summarily disposed of. In discharging dirt, manure, sugar-cane, and many other crops, this is an item of great consideration. Prices, from $50 to $80, complete.

CANAL AND RAILROAD BARROWS

FIG. 126.

These can be furnished of various sizes and modes of construction, from $2.25 to $5 each.

Railroad Cars, Coaches, Omnibuses, etc.

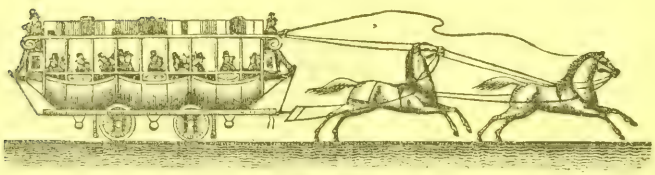


Fig. 127.

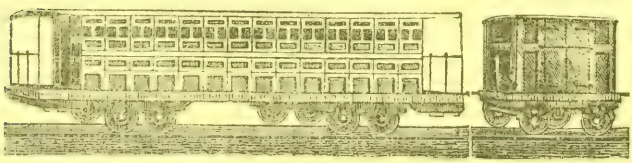


Fig. 128. Fig. 129.

Fig. 130. Fig. 131. Fig. 132. Fig. 133

These are furnished at order, substantially made after the most approved paterns.

Coaches and other vehicles furnished at short notice, at reasonable prices.

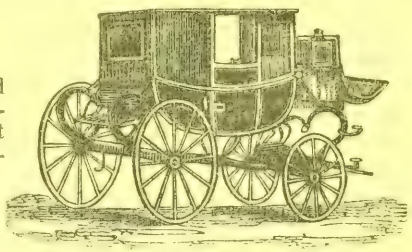


Fig. 134.

Fig. 135.

Folding Ladders.

These are so constructed that they can be folded up in the form of a pole, when not in use. The letter *a*, in Fig. 135, shows a ladder open, and *b*, its appearance when closed. The rongs are fastened by pivots at both ends, on which they freely turn; and when the ladder is folded up, they are admitted into the side pieces by means of grooves. They may be made of any length less than 15 feet, at 30 cents per foot; but when longer than this, the rate per foot must necessarily be increased.

GARDEN AND FIRE ENGINES.

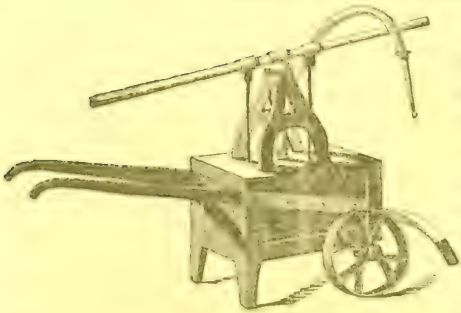


FIG. 136.

These are made of two kinds, the *single* or *forcing*, and the *double* or *suction and force*. The first requires to have the water delivered in the box, and the other will draw water from any depth not exceeding 30 feet, and force it equally as well as the first. They are easily worked by two persons, and will throw the water some sixty feet in height. Being placed on wheels, they can be removed wherever desired. Engines somewhat resembling that denoted by fig. 136, have been in use for some years, but the present ones combine some advantages and improvements over any heretofore employed.

GARDEN ROLLER.

FIG. 137.

This implement has been lately very largely introduced for horticultural and other uses. It consists of two cast-iron sections, one foot in width, and twenty inches in diameter, with an iron handle. The most complete ones have two large weights suspended from a shaft within the sections, to give them additional weight, and these are so adjusted as to throw the handle up when not under the control of the hand, thus always keeping it clean. Though generally used by hand, only, a horse can be readily attached to the handle for any heavy work. They are made in two sections, to obviate the very bad effect in turning, where the entire roller is solid, by which the earth is scraped up on either side at the same time that it requires much additional power to move it. As now arranged, when turning, one roller is moving back while the other is moving forward. There is a further advantage from having small sections, in the consideration that if one, by any mishap, becomes broken, its place can be supplied by another, without prejudice or loss to any other part of the machine.

THE FIELD ROLLER is made from sections of the same width, but of larger diameter, and each of double the weight of those in the hand roller. They have the further addition of a large wooden box, to hold any increased weight required, as they are always moved by a team, and are used for roads and fields, where large weights are necessary. But as the latter has been particularly described at page 21 of this catalogue, we omit further notice of it here.

Wire Fences.

These possess several prominent advantages—economy of room, economy in expense, economy in repair, durability, and tastefulness. Wherever timber is not absolutely without value, a wire fence is cheaper than the commonest zig-zag or Virginia-worm fence. It costs less than laying a stone wall, even if the stones were hauled gratuitously. The expense of keeping in repair is less than that of any hedges, fence, or wall, unless the latter is of the most massive kind; and it ocupies no room.

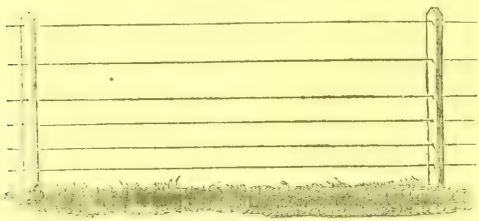


Fig. 138.

To answer the numerous inquiries for the cost, weight, and sizes of wire, annealed and properly prepared for fences, we append the following table.

Class of wire.	Diameter in hundredths of an inch.	Weight per lineal rod.	Weight per lineal mile.	Retail prices per pound.
No. 1	0.32	4 lbs. 2 oz.	1321 lbs.	$0.09 cts.
2	0.30	3 " 10 "	1166 "	0.09 "
3	0.27	2 " 15 "	944 "	0.09 "
4	0.25	2 " 8 "	809 "	0.09 "
5	0.24	2 " 5 "	746 "	0.09 "
6	0.22	1 " 15 "	627 "	0.09 "
7	0.20	1 " 9 "	518 "	0.10 "
8	0.18	1 " 4 "	419 "	0.10 "
9	0.16	1 " 0 "	331 "	0.10 "
10	0.15	0 " 14 "	291 "	0.11 "
11	0.13	0 " 10 "	219 "	0.11 "
12	0.12	0 " 9 "	186 "	0.11½ "
13	0.10	0 " 6 "	129 "	0.12½ "

From 25 to 40 per cent. will be discounted from the foregoing prices, according to the quantity, when purchased by the coil.

Blacksmith's Portable Forge and Bellows.

Fig. 139.

These are compact, light, and easily moved wherever required. They contain a bellows under the forge, and may be set in doors or out, as most convenient. The different sizes weigh from less than 100 to over 400 lbs, suited to all kinds of work, from a dentist's or jeweller's, to heavy smith's work. Price $30 to $50.

Blacksmith's Tools of all kinds—anvils, vices, tongs, hammers, sledges, stocks, taps and dies, drilling machines, punches, swedges, heading tools, chisels, &c.

Garden Syringes.

Fig. 140. Fig. 141.

These are very simple and economical implements, constructed on the principle of a force pump; and are well calculated for watering gardens or washing windows. They may also be used for expelling insects from shrubbery and plants, by means of an infusion of tobacco or sulphur water. They are various sizes, throwing from a pint to a gallon at each stroke.

Pilkinton's Improved Patent Smut Machine.

This machine has proved itself to be one of unrivalled excellence. It is warranted to answer every purpose of the most complete and expensive machinery of screens, rubbing stones, fans, &c., and will thoroughly clean the most smutty wheat. It is the best contrivance to take out chess, onions, and heavy grit, that has been introduced to the notice of millers, and is the most complete screen ever made. This machine is provided with self-acting oil feeders to the journals, and wholly does away the small fan. It runs at the rate of 1,000 revolutions per minute. This machine requires but little power, and there is little danger of fire, and it wants oiling or greasing only once a week. Price $60.

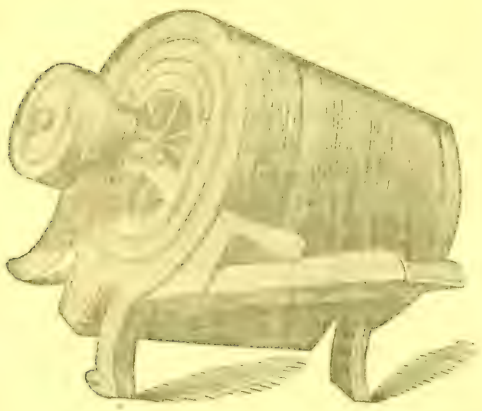


Fig. 142.

Blasting Tools.—These consist of twelve drills of various sizes and shapes; one each—rammer, needle, and cleaner, made in the most perfect manner with cast-steel points, or of solid steel, as may be desired. Also drilling hammers, with double and single faces, sledges, &c.

California Tools, of all descriptions, including mining and blasting tools, gold-washers, retorts, crucibles, chemicals for testing ores, small balances, &c. &c.

Indestructible Mineral Paint—A most admirable and effective preservative from the injurious effects of the weather and preventive of fire, becoming in a short time after being ground or mixed in oil, of the consistence and quality of slate. For manufactories, railway depôts, roofs of all descriptions, public buildings, fences, &c., it is invaluable. For sale by the barrel or ton, at $4 per 100 lbs.

Sugar-Mills for Grinding Cane.

These are furnished of all sizes, to work by horse or steam power. They are made with two and three rollers, and work horizontally and vertically for horse power; and with three horizontal rollers of larger

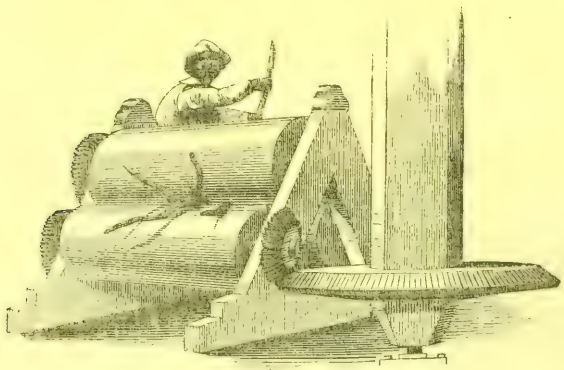


Fig. 143.

dimensions for steam or water power. Great improvement has recently been made in the construction of these mills, both in economising power and the cane juice. Fifty per cent. is near the average of juice heretofore expressed from the cane, leaving about forty per cent. in the bagasse Machines are now constructed by which 75 to 80 per cent. of juice is extracted.

Price of horse-power mills with two vertical rollers and geering, brass boxes, and heavy-wrought shaft, $120 to $200. Horizontal mills, with three rollers for horse or steam power, $250, to $2,500.

VEGETABLE BOILERS.

These boilers consist of a kettle placed over a cast-iron stove furnace, of which they form a part. They can be placed out doors or in a room where the smoke is carried into the chimney through a stove pipe. There is great economy of fuel by this arrangement, as the flame passes on every side to the top of the kettle. Many of them are now used by sugar planters, with copper boilers, and where wood is scarce, they are of great advantage in boiling or reducing the sap, with the utmost economy of fuel.

FIG. 144.

PRUNING AND BUDDING KNIVES.

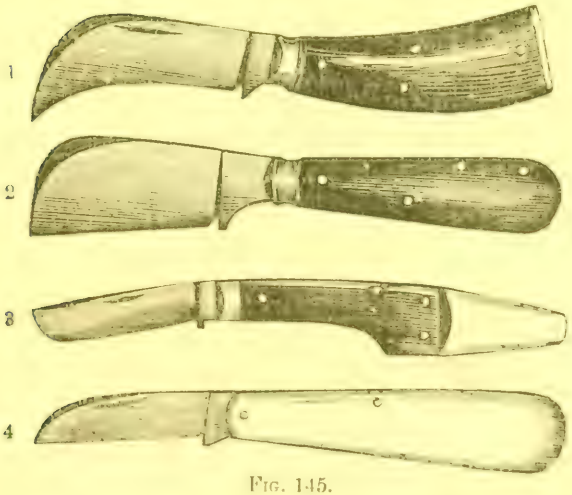


FIG. 145.

Nos. 1, 2 and 4 are good and convenient form for pruning young trees and are made strong and heavy for that purpose.

No. 3 represents the best and most approved form for budding. The edge of the blade is rounded at the point, and will shut up as a pocket knife. At the other end is permanently fixed a thin flat ivory lifter, with which the bark is loosened and raised, after being cut to receive the bud.

PLANING MACHINE.

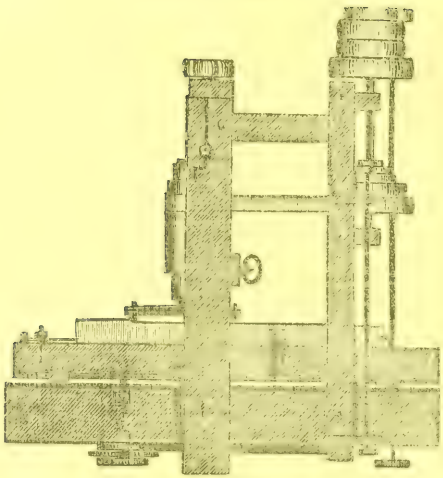


FIG. 146.

This machine is valuable for planing all lengths, widths, and thicknesses of joists, plank and boards, various kinds of mill work, and other parts of wood work for machinery, plows, &c., &c. It will plane hard or soft wood equally well and with great rapidity. They have been used for many years with entire success through various parts of the Union. There are several sizes to plane different widths, and lengths.

SWARD D PLOW FOR RECLAIMING MEADOWS.

FIG. 147.

A strong four-horse plow, same size and form as Sward B, with the addition of a wrought *lock-coulter*, as attached to Eagle No. 2, Fig. 3 To this plow is affixed, when required, a sharp steel-edged share or point, cutting very wide, and a reversed or drag *cutter* for the purpose

of plowing and completely turning over the surface of wet meadows when drained by ditching. A crane-clevis is attached to the end of the beam which enables the off ox or horse to keep clear of the miry open furrow, so very fatiguing to him, and tread on the *unbroken* ground, thus making it comparatively easy work for the team, and obviating the great objection to breaking up wet meadows or swampy ground. The newly-invented dial-clevis and draft-rod, as described in Eagle No. 2, Fig. 3, will enable the off horse to tread on solid ground in plowing wet meadows, nearly as well as the crane-clevis. It also enables the plow man to run the plow close along side of a fence or ditch. This would be an admirable plow for the stiff lands on the Mississippi, and for the prairie lands of the west. When the fixtures for meadows are removed and the original point or share replaced, the plow is again adapted to the rugged upland soils, thus answering the double purpose of an upland and meadow plow.

IMPROVED CORN AND COB-CRUSHER.

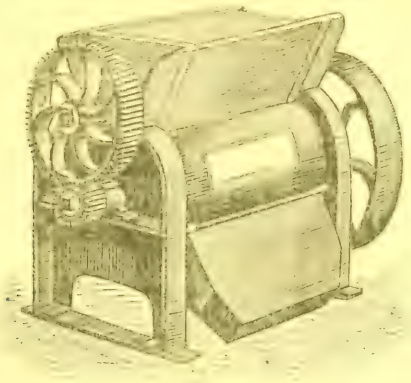


FIG. 148.

This machine is designed for crushing corn and cobs for feeding stock, or previous to passing through mill stones for grinding into fine provender. It is also used to crack corn alone, suitable for hommony or for the use of stables. It has the merit of compactness, durability, uniformity in its work, and economy of power. Its height, when set up for work, is about 3 feet. It will grind the cobs and corn to the same degree of fineness, and this it will do when the corn is damp, or even green, without clogging. It is generally driven by a four-inch belt—it may be driven by gear, however, without inconvenience—by which cobs and corn are cracked faster than one run of stones can grind them. It is also asserted by experienced millers, that any run of stones will grind at least one fourth faster and finer when the cobs are cut up in this manner. Price $50.

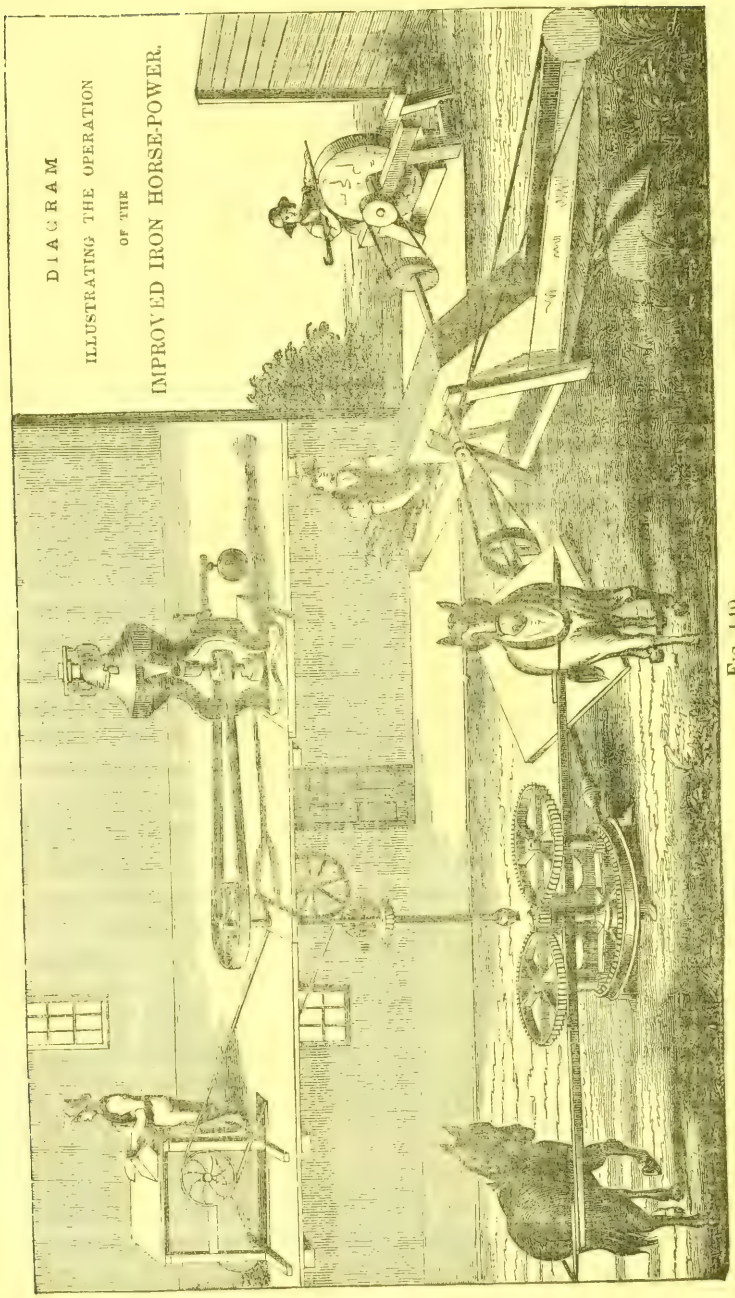


DIAGRAM
ILLUSTRATING THE OPERATION
OF THE
IMPROVED IRON HORSE-POWER.

FIG. 119.

NEW AND HIGHLY IMPROVED IRON HORSE-POWER.

This power is compact, strong, and portable, and without bolts and joints, that are liable to work loose and get out of order. It is made on strictly scientific principles, and is so arranged as to combine the least friction and greatest durability within the smallest compass. Five eighths of the machine is firmly connected together, and not weakened by joints, and that on which the power of the horse is exerted, constitutes three eights only; thus throwing the force more directly upon the work to be executed, instead of expending it in overcoming friction, produced by complicated wood and iron frame work and cog wheels. In the gearing, great attention has been paid to prevent friction, by placing two pinions opposite each other and to the centre, thus creating a compensating force around the centre of motion, and at the same time preventing wear at the journals and bearings.

The horse-power as seen in Fig. 148, will drive the centre upright shaft 28 revolutions to one of the horse; and from this shaft, a strap is taken which drives a corn-mill. On the same floor, a corn-sheller is represented in motion, and on the ground floor we have a thresher, separator, and grindstone driven by a shaft geared from the lower end of the upright shaft. This shows that a number of applications can be made from the same machine in one position. If it is required to thresh the grain in the field, it can be done without difficulty, and then replacing the horse-power, as shown in the cut, it can be used for shelling corn, ginning cotton, pumping water, sawing firewood, driving lathes, grinding flour, or sawing lumber.

FOUR-HORSE POWERS are made on the same principle as the foregoing, and of an additional strength, proportioned to the increased power and strain.

SAW-MILLS.—An upright saw-mill driven by a crank is made to be attached to the foregoing power, which, with two horses only, will saw 100 feet of boards per hour, out of logs 15 inches diameter or over.

The price of the above saw-mill and power complete is $400 for a mill sawing logs 13 feet long. For sawing greater lengths, $3 per foot will be charged in addition.

BORING AND MORTISING MACHINES.—These are made to mortise wagon-hubs and boxes, plow-beams, sash work, doors, &c.

HYDRAULIC PRESSES.

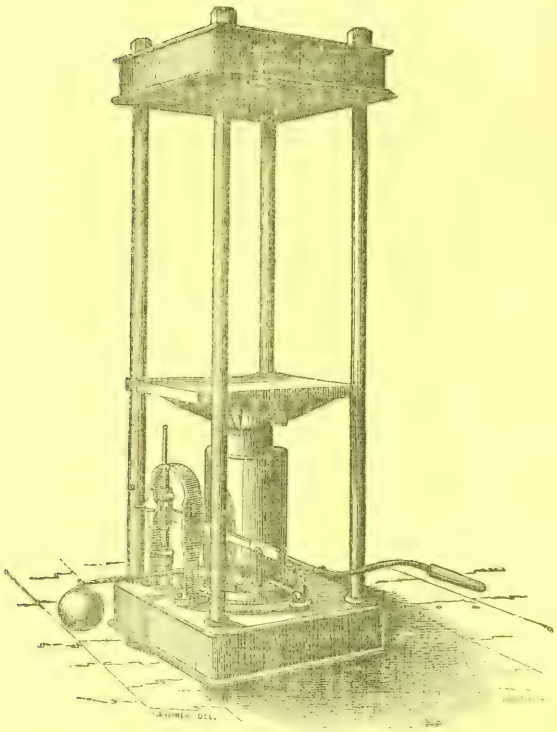


FIG. 150.

These machines are constructed of various sizes, with solid wrought-iron cylinders, and may be made to work by steam power, with one or more pumps. The uses to which they may be applied are numerous, among which we would particularly mention the pressing of hay, wool, cotton bales, separating the oil from lard, flaxseed, castor beans, and other oleaginous seeds. They may also be employed with advantage, in many instances, in raising or moving buildings and other great weights.

Price with 8-inch ram, a single pump, and platine (follower), 38 by 26 inches, $800; 10-inch ram, pump, and platine 40 by 28 inches, $1,000; 12-inch ram, pump, and platine 46 by 32 inches, $1,250. Separate cisterns, $50 extra. Larger and smaller sizes made to order.

POST-HOLE AUGERS.—These are made of convenient size and length for boring holes in the ground, of dimensions suited to posts of any required sizes. They lift the soil from the hole as it is bored, without the necessity of using shovel, spade, or post spoon.

SOUTHERN CORN-SHELLER.

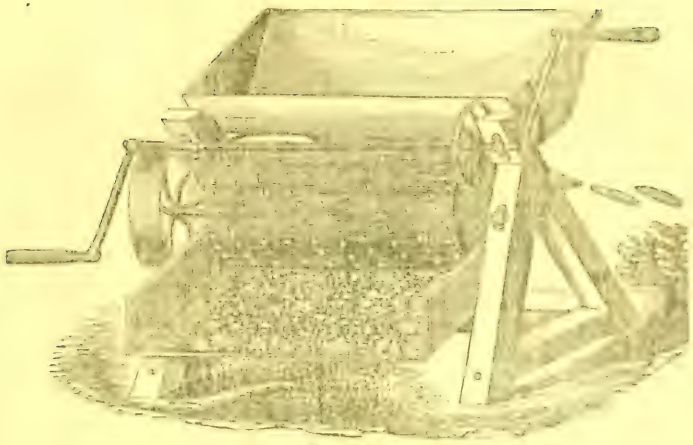


FIG. 151.

This machine is well adapted for shelling Indian corn, and is suitable for large plantations. It may be worked by one or two men or by horse power, and shelled by manual labor about 300 bushels, and by horse power about 700 bushels per day. It separates the corn from the cob, both of which are left unbroken.

ENDLESS-CHAIN PUMP.

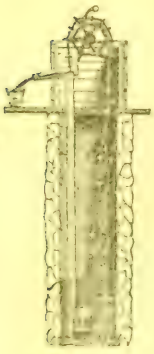


FIG. 152.

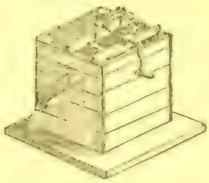


FIG. 153.

This is a very simple pump, which is fast becoming popular with those who have tried it. For any depth not exceeding 25 feet, it works admirably; but when the height to which it is required to raise the water is much beyond this distance, a forcing pump may be substituted. The great advantages it possesses is ease of working, simplicity of construction, economy of price, and impossibility of freezing in winter.

MALLEABLE CAST-IRON MILK PANS.

These are made of various sizes, and lined with porcelain, which prevents the oxydation of the metal by the action of milk or any other liquid which they may contain. They combine the strength and durability of iron, with all the advantages of glass, and are universally approved by those who have used them.

Force Pumps.

We give below two cuts of the *forcing* or *lifting pump*, as it is distinguished from the *suction pump*. Fig. 155, shows the pump as sold from the warehouse. Fig. 154, as it is placed in the well, the only difference being in the position of the latter which is in the well, with the suction and forcing pipes attached, and the rod, connecting the piston with the handle, lengthened. It will be seen that the force pump is also a suction pump, and capable of *drawing* water 32 or 33 feet, while its capacity for forcing it upwards in height, is limited only to the strength of the pipes, and the power applied for this purpose.

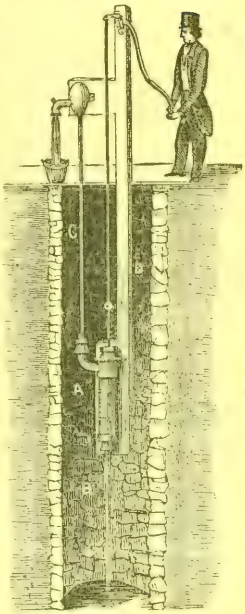


Fig. 154.

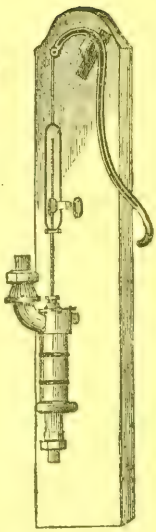


Fig. 155.

The force pump has not until recently been sold at moderate prices, but late improvements enable the manufacturer to sell them as low as $12 or $15, for ordinary pumps, and from that up to $500, or even more, for the largest and most complete article.

Hand Cotton Gins.

These are usually made of about eighteen saws, and worked entirely by hand. They gin equally as well as the larger or horse-power gins, but, of course, work much slower.

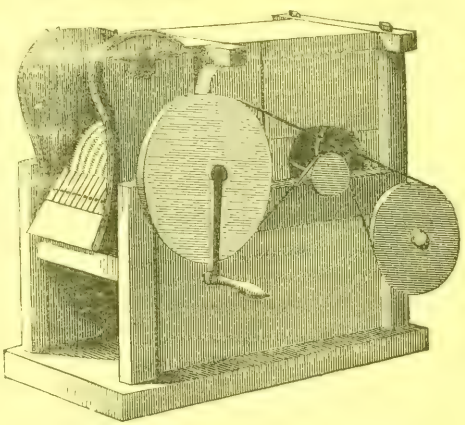


Fig. 156.

Wood-Sawing Machine for Cutting Fuel.

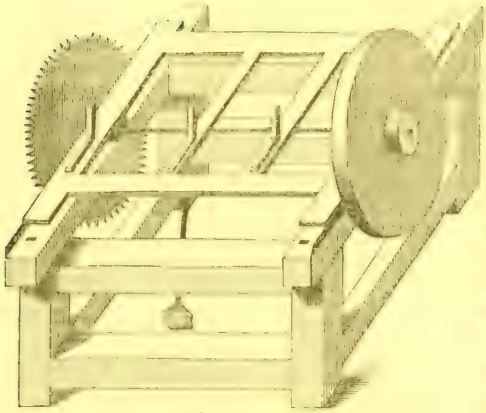


Fig. 157.

The subjoined cut shows a machine in general use for sawing wood. It is easily driven by a one-horse chain power, and is capable of sawing several cords of wood per day. It is simple and easily worked and kept in order.

Others, of larger dimensions, are used for slitting plank, boards, scantling, &c. For this purpose, a different saw is required than when used for cutting across the grain. For the last purpose, the teeth are triangular; for the former, they are hooked like an eagle's beak. The first is called the cross-cut, the last the rip saw.

Root and Apple Grinder.

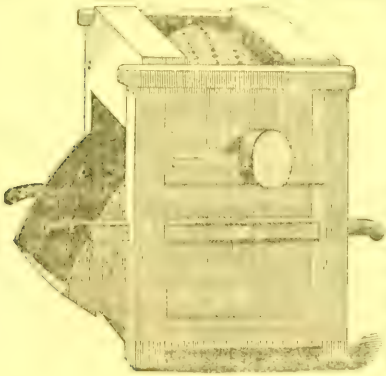


Fig. 158.

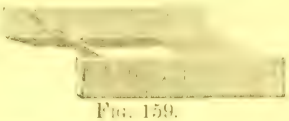


Fig. 159.

This machine has been recently constructed for the purpose of grinding, or rather rasping apples, by which the fruit is reduced to a fine pulp, and the juice can be much more thoroughly pressed out, than by the old process of grinding. It is also made to rasp or grind the several species of roots, as the mandioca, or Brazilian arrow root, the Curcuma angustifolia, or East-India arrow root, the Cycas circinalis, the Zamia pumila, of Florida, the Maranta arundinacea, or common arrow root plant of the West Indies, and the yuca or cazabe root, a plant of Cuba; also potatoes, &c., from which the arrow root, tapioca, and starch are made. The machine can be propelled both by hand or horse power, as may be required. When large quantities of roots are to be prepared, the horse power is preferable. We make a smaller machine for rasping horse radish, &c., which works by treddle power.

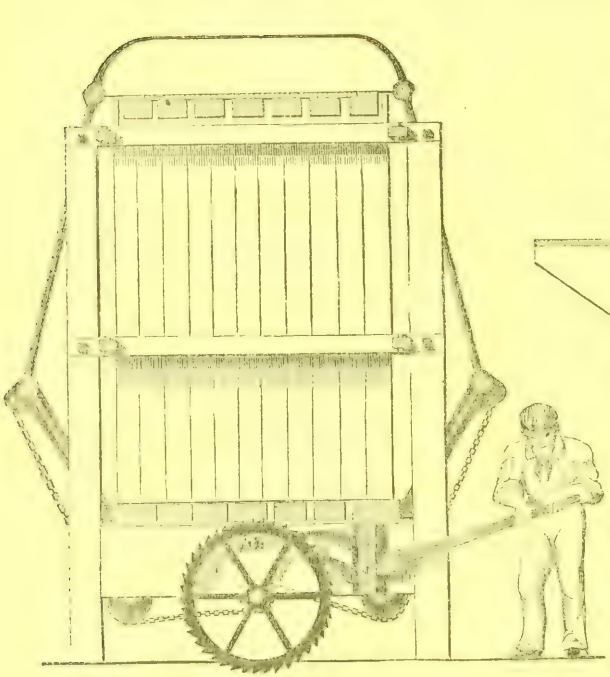


FIG. 160.

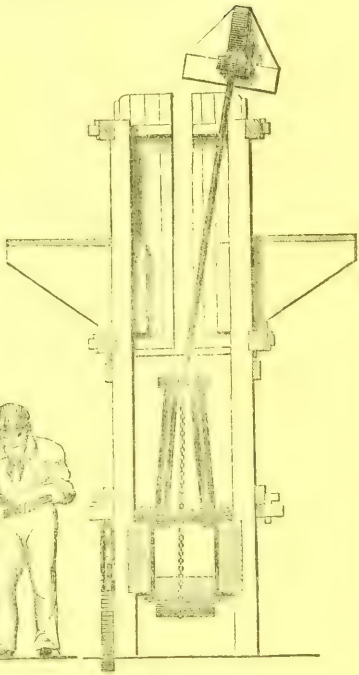


FIG. 161.

Fig. 160 is a side view of Bullock's Portable Progressive Power Press. Fig. 161, is an end view of the same, with the follower run up and pushed one side, preparatory to filling the box.

These presses are in use in this city for baling dry goods, rags, cotton, hay, wool, hemp, flax, paper, moss, &c., and they are taking the place of other presses throughout the country. Manufacturing establishments and warehouses, are generally adopting these presses on account of their great *convenience, power and durability*, and the dispatch with which the work is done.

STARCH AND ARROW-ROOT MAKING MACHINES.

In addition to those described on the foregoing page, we make others of various forms. Some are made with large cylindrical sheet-steel grates, that can be kept sharp, and will wear for years, and work very rapidly. Others are made with iron cylinders, and numerous fine steel saws, that can be taken out, filed, &c., and re-adjusted at pleasure. Large hoppers are constructed, which have a heavy follower pressing upon the roots, keeping them to the cylinders; and by this means, very much increasing the rapidity of their performance.

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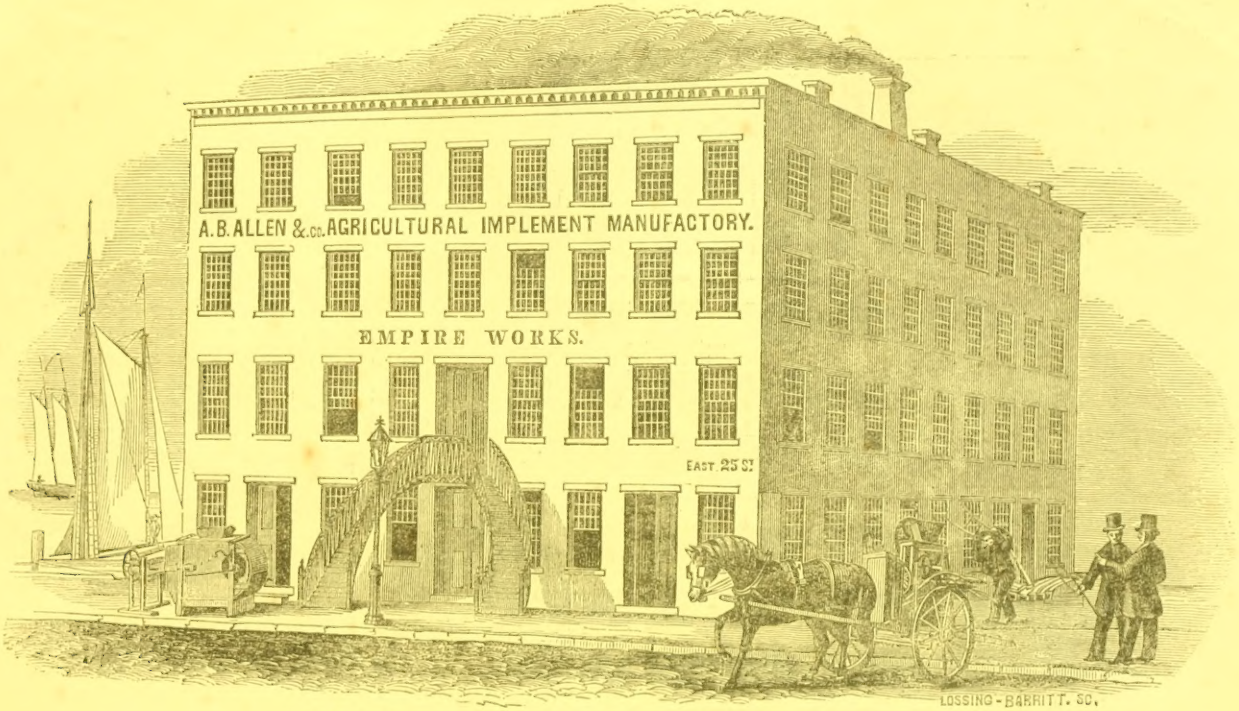
It is really a great satisfaction to get hold of an American treatise on Agriculture, that has a plain, practical, common sense character of its own. The author of this work is already known to the agricultural public as a thorough practical farmer and stock-breeder. That he well knows what he is about on a farm, these pages abundanty show. No mere book-maker could have written such a book; and we may add, also, that no mere practical farmer could have written it. A "good practical work" can only be written by a man who has both thought and acted well. What distinguishes this volume, is its conciseness, its clearness, and its perspicuous treatment of the subject in hand. We think, therefore, that Mr Allen's volume, the basis of which is good practical farming, as practised by the best cultivators in the United States, with an intelligent reference to those principles of science which lie at the root of all successful practice, is likely to be of as much or more real service to us, than any work on agriculture yet issued from the press, and we gladly commend it to the perusal of every one of our readers engage in the cultivation of land.—*A. J. Downing's Horticulturist*



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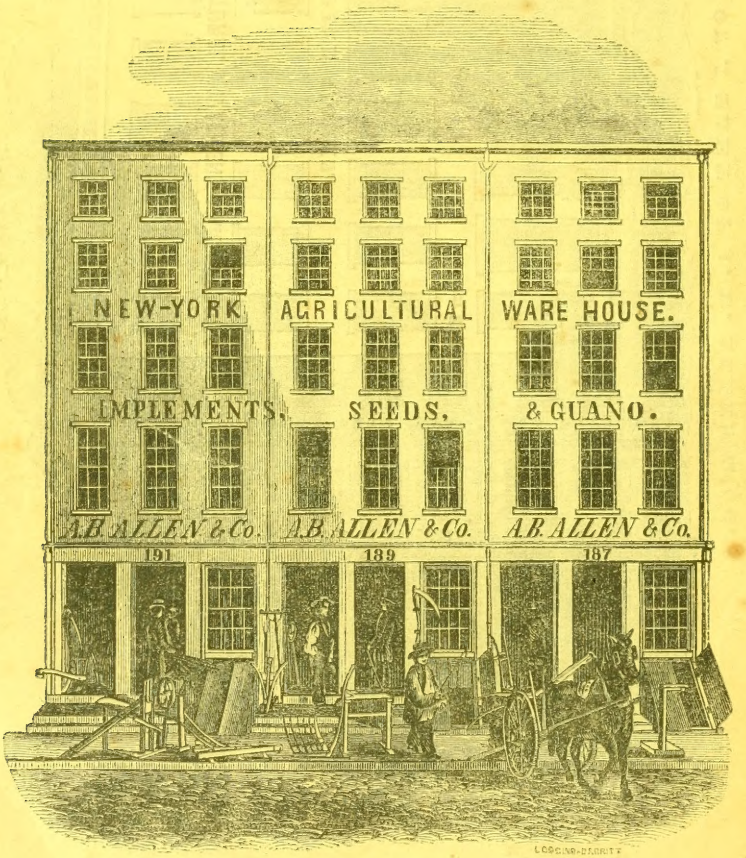

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